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Environmental Assessment
DOI-BLM-UT-C010-2015-0009-EA

May 2015 Oil and Gas Lease Sale

Location: Cedar City Field Office
Beaver County, Utah

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May 2015 Preliminary Oil and Gas Lease Sale

DOI-BLM-UT-C020-2015-0009-EA

1.0 PURPOSE & NEED

1.1 Introduction

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental consequences of the May 2015 Oil and Gas Lease Sale for parcels located in Beaver County and land administered by the Cedar City Field Office (CCFO) as proposed by Bureau of Land Management (BLM), Utah State Office. The EA is a site-specific analysis of potential impacts that could result with the implementation of a proposed action or alternatives to the proposed action. The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any “significant” impacts could result from the analyzed actions. “Significance” is defined by NEPA and is found in regulation 40 CFR 1508.27. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of “Finding of No Significant Impact” (FONSI). If the decision maker determines that this project has “significant” impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record (DR) may be signed for the EA approving the selected alternative, whether the proposed action or another alternative. A DR, including a FONSI statement, documents the reasons why implementation of the selected alternative would not result in “significant” environmental impacts (effects) beyond those already addressed in the Cedar Beaver Garfield Antimony Resource Management Plan, CBGA RMP (BLM, 1986).

1.2 Background

The BLM policy is to make mineral resources available for use and to encourage their orderly development to meet national, regional, and local needs. This policy is based in various laws, including the Mineral Leasing Act of 1920 (MLA) and the Federal Land Policy and Management Act of 1976 (FLPMA). The Federal Onshore Oil and Gas Leasing Reform Act of 1987 (Sec. 5102(a)(b)(1)(A)) directs the BLM to conduct quarterly oil and gas lease sales in each state whenever eligible lands are available for leasing. Leases would be issued pursuant to 43 CFR Part 3100.

Expressions of Interest (EOIs) are submitted by the public in order to “nominate” specific public lands that the individual or entity submitting the EOI wants BLM to offer for oil and gas leasing and development. In general, the BLM Utah State Office (USO) conducts quarterly competitive oil and gas lease sales in order to respond to requests from the public that it offer certain nominated public lands in Utah for oil and gas lease. The BLM divides the lands nominated in EOIs into logical lease parcels, which will be considered for potential offering at a competitive oil and gas lease sale. Anyone submitting an EOI which includes split estate lands – private surface/Federal minerals – must provide, with the EOI, the name and address of the current private surface owners(s). When a split estate parcel is under consideration, the BLM sends an

initial letter to the surface owners(s). This letter informs the landowner that an EOI has been received which involves their surface ownership. This initial notification provides notice of the scheduled auction and invites their participation on a site visit to the parcel. As described below, after a parcel has gone through an interdisciplinary review, if it is recommended for leasing, a second letter is sent to the private surface owners for lease parcels with split estate lands, which elaborates on BLM's regulations and procedures for Federal oil and gas leasing and development on split estate lands.

In the process of preparing a lease sale, the BLM USO compiles a list of lands nominated and legally available for leasing, and sends a preliminary parcel list to the appropriate District Office where the parcels are located. Field Office staff then review and verify that the preliminary parcels are in areas available for leasing and determine if any new information has become available, or any circumstances have changed, in the time since the subject lands were identified as available for oil and gas leasing. The parcels are then assessed to determine what level of analysis is required and the appropriate protective stipulations and notices to be applied to each parcel. Appropriate consultations are conducted, when necessary, and any special resource conditions are identified for potential bidders. In accordance with the requirements of BLM Washington Office (WO) Instruction Memorandum (IM) 2010-117, NEPA and other applicable laws, regulations and policies, in most instances, the Field Office where the proposed lease parcels are located will prepare an EA in order to identify and analyze the potential impacts of leasing the parcels.

After a draft of the EA is complete, it and an unsigned FONSI (if appropriate) are made available to the public for a 30-day public comment period by posting the documents on the BLM Utah Environmental Notification Bulletin Board (ENBB)¹. The draft EA, which includes a proposed parcel list and the lease stipulations and notices applicable to each proposed parcel, the unsigned FONSI, as well as other information and instructions for the subject oil and gas lease sale, are also made available for public review using the BLM Utah's Oil and Gas Leasing website². Following the conclusion of the public comment period for the draft EA, the BLM analyzes, responds to and incorporates (where appropriate) all substantive comments received during the public comment period and changes to the EA and/or proposed lease parcel list are made, if necessary.

The EA, with any revisions determined appropriate following the public comment period, and, if still considered appropriate, an unsigned FONSI are again made available to the public through the concurrent posting, at least 90 days in advance of the scheduled lease sale, of those documents and a Notice of Competitive Lease Sale (NCLS). The parcels proposed for lease, along with the applicable stipulations and lease notices for each proposed parcel, will be identified in attachments to the NCLS. The posting of the NCLS, EA and FONSI initiates a 30 day public protest period for the proposed lease sale offering, which will end 60 days before the scheduled lease sale.

The BLM will review and respond to all substantive protests received during the protest period. In reviewing and responding to protests, BLM may revise the parcels and/or applicable stipulations and notices proposed in the NCLS, if determined appropriate. If any changes are

¹ <https://www.blm.gov/ut/enbb/index.php>

² http://www.blm.gov/ut/st/en/prog/energy/oil_and_gas/oil_and_gas_lease.html

needed to the parcels, stipulations and notices identified through the NCLS, an erratum is posted to the BLM Utah's Oil and Gas Leasing website, and in the public room for the BLM USO, in order to notify the public of any such changes. The lease parcels, as identified by the NCLS and any errata to the NCLS, would be offered for sale at a competitive oral auction tentatively scheduled to be held at the BLM USO on May 19, 2015. If a parcel of land is not purchased at the lease sale by competitive bidding, it may still be leased non-competitively during the two year period that follows the offering of the parcel at the competitive lease auction.

A lease may be held for ten years, after which the lease expires unless oil or gas is produced in paying quantities. A producing lease can be held indefinitely by economic production.

Before any surface disturbances may occur on a lease, the lessee or operator for the lease must submit an Application for Permit to Drill (APD) (Form 3160-3) to the BLM for approval and an approved APD must be obtained. The standard lease terms, which are contained in the standard lease form (Form 3100-11), along any stipulations attached to the lease must be complied with before an APD may be approved. Following BLM approval of an APD, a lessee may produce oil and gas from the well in a manner approved by BLM in the APD or in subsequent sundry notices to the APD. The operator must notify the appropriate authorized officer 48 hours before starting any surface disturbing activity approved in an APD.

The BLM received nominations for ten parcels of land within the Cedar City Field Office (CCFO) to offer for oil and gas leasing at the May 2015 oil and gas lease sale. Those ten parcels were assigned the following parcel numbers: UT0515-012, UT0515-013, UT0515-014, UT0515-019, UT0515-020, UT0515-021, UT0515-022, UT0515-023, UT0515-024 and UT0515-025. After an initial review of the ten parcels nominated within the CCFO, in accordance with BLM WO IM No. 2012-043, *Greater Sage-Grouse Interim Management Policies and Procedures*, all of parcels UT0515-014, UT0515-021, UT0515-022, UT0515-023, UT0515-024, and UT0515-025 and portions of parcels UT0515-019 and UT0515-020 were recommended to be deferred from offering at May 2015 lease sale due to the presence of lands identified as habitat for greater sage-grouse (for additional information on the deferred lands, see Appendix D – Deferred Parcel List).

This EA has been prepared to disclose and analyze the environmental consequences of offering for lease at the May 2015 oil and gas lease sale, and the subsequent issuance of oil and gas lease for, four oil and gas lease parcels, UT0515-012, UT0515-013, UT0515-019 and UT0515-020, as identified in Appendix A, Oil and Gas Lease Sale List, and Appendix B, Parcel Map (hereafter “the Proposed Action”). The mineral rights for these parcels are owned by the federal government and administered by the CCFO (see Appendix B). None of the parcels proposed in the CCFO occur on split-estate lands. This EA is being used to determine the necessary administrative actions, stipulations, lease notices, special conditions, or restrictions that would be made a part of an actual lease at the time of issuance. Under all alternatives, continued interdisciplinary support and consideration would be required to ensure on the ground implementation of planning objectives, including the proper implementation of stipulations, lease notices and Best Management Practices (BMPs) through the APD process.

1.3 Purpose and Need for the Proposed Action

Oil and gas leasing is a principal use of the public lands, as identified in sections 102(a)(12) and 103(e)(1) of FLPMA, and it is conducted to meet requirements of the MLA, as amended, the Mining and Minerals Policy Act of 1970, and the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (Reform Act).

In accordance with the MLA, as amended, BLM Utah must hold competitive oil and gas lease sales, at least quarterly, when lands that are available for oil and gas leasing have been nominated. Moreover, BLM is required by law to review areas that have been nominated for potential inclusion at a competitive oil and gas lease sale.

The parcels within the CCFO proposed for offering for lease at the May 2015 oil and gas lease sale were nominated by the public. Thus, the Proposed Action and the May 2015 oil and gas lease sale are needed to respond to the public's oil and gas leasing nomination requests and, in doing so, ensure that BLM upholds the various statutorily imposed responsibilities it has been entrusted with.

The purpose of the Proposed Action is to provide parcels for inclusion at a competitive oil and gas lease sale to be held by the BLM USO on May 19, 2015. Utah is a major source of natural gas for heating and electrical energy production in the lower 48 states. The sale of oil and gas leases in Utah is needed to meet the energy needs of the United States public. The continued offering for sale and issuance of lease parcels maintains options for oil and gas production as oil and gas operators seek new areas for production or attempt to develop previously inaccessible or uneconomical reserves.

Offering parcels for competitive oil and gas leasing provides for the orderly development of fluid mineral resources under BLM's jurisdiction in a manner consistent with multiple use management and environmental consideration for the resources that may be present. The May 2015 oil and gas lease sale review process and the consideration of the Proposed Action will ensure that adequate provisions are included in the standard lease terms, lease stipulations and leases notices to protect public health and safety and assure full compliance with the objectives of NEPA and other federal environmental laws and regulations designed to protect the environment and mandating multiple use management of the public lands.

1. 4 Conformance with BLM Land Use Plan

The Proposed Action alternative described below is in conformance with the Record of Decision (ROD) on the Final Cedar Beaver Garfield Antimony Resource Management Plan/Final Environmental Impact Statement (CBGA FRMP/FEIS; BLM 1986) because it is specifically provided for in the planning decision. Specifically, it conforms to Minerals Objective 1 on page 19, which states: "Provide maximum leasing opportunity for oil, gas, and geothermal exploration and development by utilizing the least restrictive leasing categories necessary to adequately protect sensitive resources." It has been determined that the proposed action alternative would not conflict with other decisions throughout the subject land use plan.

Oil and gas leasing categories were identified in the Cedar City District Oil and Gas Leasing Environmental Analysis Record (EAR) prepared in 1976 and reviewed by the Final Cedar

Beaver Garfield Antimony Resource Management Plan (CBGA RMP; BLM 1984) and the Supplemental EA for Oil and Gas Leasing, Cedar City District (EA #UT-040-88-69, BLM 1988). The original oil and gas leasing categories established in 1976 were amended in the CBGA RMP to protect other resource values. The CBGA RMP categorizes all lands in the planning area that are available for leasing along with any applicable stipulations that would be attached to leases offered for certain areas (BLM 1984; pages 25-56 and Mineral Map 1). All of the proposed parcels are located within an area categorized in the CBGA RMP as Category 1 lands that are open to oil and gas leasing with Standard Lease Terms.

Standard lease terms provide for reasonable measures to minimize adverse impacts to specific resource values, land uses, or users (the standard lease terms are contained in Form 3100-11, Offer to Lease and Lease for Oil and Gas, U.S. Department of the Interior, BLM, October 2008). 43 CFR 3101.1-2 states: “A lessee shall have the right to use as much of the leased lands as is necessary to explore for, drill for, mine, extract, remove and dispose of all the leased resources in leasehold subject to: Stipulations attached to the lease; restrictions deriving from specific, non-discretionary statutes; and such reasonable measures as may be required by the authorized officer to minimize adverse impacts to other resource values, land uses or users not addressed in the lease stipulations at the time operations are proposed.” Compliance with valid, nondiscretionary statutes (laws) is included in the standard lease terms and would apply to all lands and operations that are part of all of the alternatives. Nondiscretionary actions include the BLM’s requirements under federal environmental protection laws, such as the Clean Water Act, Clean Air Act, Endangered Species Act, National Historic Preservation Act, and Federal Land Policy Management Act, which are applicable to all actions on federal lands even though they are not reflected in the oil and gas stipulations in the RMP and would be applied to all potential leases regardless of their category. Also included in all leases are mandatory stipulations for the protection of cultural resources (BLM WO IM No. 2005-03, Cultural Resources and Tribal Consultation for Fluid Minerals Leasing) and threatened or endangered species (BLM WO IM No. 2002-174, Endangered Species Act Section 7 Consultation). The BLM would also encourage industry to consider participating in EPA’s Natural Gas STAR program under all alternatives. The program is a flexible, voluntary partnership between EPA and the oil and natural gas industry wherein EPA works with companies that produce, process, transmit and distribute natural gas to identify and promote the implementation of cost-effective technologies and practices to reduce emissions of methane, a greenhouse gas.

The EA for Oil and Gas Leasing in the Eastern Portion of the Cedar City Field Office (EA #UT-040-08-036, BLM 2008 as amended) provided additional protective measures beyond those described in the CBGA RMP, and these measures would be applied as necessary to the parcels.

1.5 Relationship to Statutes, Regulations, or Other Plans

The Proposed Action is consistent with federal, state and local laws, regulations, and plans to the maximum extent possible, including the following:

- Federal Land Policy and Management Act (1976) as amended and associated regulations found at 43 CFR 1600
- Mineral Leasing Act (1920) as amended and associated regulations at 43 CFR Part 3100

- National Environmental Policy Act (1969) and the associated regulations at 40 CFR Parts 1500 through 1508
- Taylor Grazing Act (1934) as amended
- Utah Standards and Guidelines for Rangeland Health (1997)
- National Historic Preservation Act (1966) as amended and associated regulations at 36 CFR Part 800
- Bald and Golden Eagle Protection Act (1962)
- Endangered Species Act (1973) as amended
- BLM Manual 6840- Special Status Species Management
- Migratory Bird Treaty Act (1918)
- Utah Partners in Flight Avian Conservation Strategy Version 2.0 (Parrish et al., 2002)
- Birds of Conservation Concern 2002 (USFWS 2008)
- Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds
- MOU between the USDI BLM and USFWS to Promote the Conservation and Management of Migratory Birds (4/2010)
- National Sage-grouse Habitat Conservation Strategy (BLM 2004)
- Strategic Management Plan for Sage-grouse 2002 (UDWR 2002)
- Western Association of Fish and Wildlife Agencies, Conservation Assessment of Greater Sage-grouse and Sagebrush Habitats (Connelly et al. 2004)
- BLM Greater Sage-Grouse Interim Management Policies and Procedures (BLM WO IM 2012-043)
- BLM National Greater Sage-Grouse Land Use Planning Strategy (BLM WO IM 2012-044)
- Utah Supplemental Planning Guidance: Raptor Best Management Practices (BLM USO IM 2006-096)
- Oil and Gas Leasing Reform – Land Use Planning and Lease Parcel Reviews (BLM WO IM 2010-117)
- Oil and Gas Leasing Program NEPA Procedures Pursuant to Leasing Reform (BLM USO IM 2014-006)
- Determining Conformity of Federal Actions to State or Federal Implementation Plans (40 CFR Part 93 Subpart E)
- MOU Among the USDA, USDI and EPA Regarding Air Quality Analysis and Mitigation for Federal Oil and Gas Decisions Through the NEPA Process (2011)
- Wilderness Act (1964)
- BLM Manual 6310 - Conducting Wilderness Characteristics Inventory of BLM Lands
- BLM Manual 6320 - Considering Lands with Wilderness Characteristics in the BLM Land Use Planning Process
- Cedar Beaver Garfield Antimony Draft Resource Management Plan EIS, May 1984
- Cedar Beaver Garfield Antimony Resource Management Plan and Record of Decision, October 1986

Utah's Standards for Rangeland Health address upland soils, riparian/wetlands, desired and native species and water quality. These resources are either analyzed in Chapters 3 and 4 of this document or, if not impacted, in the attached Interdisciplinary Team Checklist (Appendix C).

1.6 Identification of Issues

The Proposed Action was reviewed by an interdisciplinary parcel review (IDPR) team composed of resource specialists from the CCFO. This team identified resources in the parcel areas which might be affected and considered potential impacts using the most current office records and applicable technical or scientific data for a particular resource or area, personal knowledge, geographic information system (GIS) data, and site visits to the proposed lease parcels. The USO specialists for air quality, wildlife, cultural resources, special designations, visual resources and solid minerals also reviewed this proposal.

On August 18, 2014, the BLM USO sent letters to the National Park Service (NPS), United States Fish and Wildlife Service (USFWS), United States Forest Service (USFS) and the State of Utah's Public Lands Policy Coordination Office (PLPCO), Utah Division of Wildlife Resources (UDWR) and the State Institutional Trust Lands Administration (SITLA) to notify them of the pending May 2015 lease sale, solicit comments and concerns on the preliminary parcel list and invite them to participate in the site visits to the subject lease parcels.

On September 10, 2014, the IDPR team conducted site visits to all of the proposed parcels to validate existing data and gather new information (if present) in order to make an informed leasing recommendation for the May 2015 oil and gas lease sale. None of the other agencies participated in the site visits with the IDPR team. The results of the IDPR team review are contained in the Interdisciplinary Team Checklist, Appendix C.

Public notification for this project was initiated by entering the project information on the ENBB on November 3, 2014. The EA and unsigned FONSI were posted for public review and comment from December 19, 2014 through January 23, 2015. Additional information for the public is maintained on the Utah BLM Oil and Gas Leasing Webpage. Additional information on public participation is available in Section 5.3.

1.7 Summary

This chapter has presented the purpose and need of the analyzed project, as well as the process utilized for identifying and assessing the relevant issues, including those elements of the human environment that could be affected by the implementation of the alternatives analyzed. In order to meet the purpose and need of the Proposed Action in a way that resolves or mitigates the relevant issues, BLM has considered and/or developed a range of action alternatives. These alternatives are presented in Chapter 2. The potentially affected environment will be described in Chapter 3. The potential environmental impacts or consequences that could result from the implementation of each alternative have been considered and analyzed in detail and the results of the analyses that occurred are discussed in Chapter 4 and Appendix C.

2.0 DESCRIPTION OF ALTERNATIVES, INCLUDING THE PROPOSED ACTION

2.1 Introduction

This environmental assessment focuses on the Proposed Action and No Action alternatives. Other alternatives were considered, but ultimately not analyzed in detail because the issues identified during scoping did not indicate a need for additional alternatives or mitigation beyond those contained in the Proposed Action and No Action alternatives. The No Action alternative is considered and analyzed to provide a baseline for comparison of the impacts of the Proposed Action.

2.2 Alternative A – Proposed Action

Two nominated parcels with boundaries as depicted on the preliminary parcel list (parcels UT0515-012 and UT0515-013) and two nominated parcels with boundaries that have been modified from their depiction on the preliminary parcel list (parcels UT0515-019 and UT0515-020) within the jurisdiction of the CCFO are proposed for sale at the competitive oil and gas lease sale to be held at the BLM USO on May 19, 2015. In accordance with BLM WO IM No. 2012-043, *Greater Sage-Grouse Interim Management Policies and Procedures*, the boundaries for parcels UT0515-019 and UT0515-020, as depicted on the preliminary parcel list, have been redrawn so as to exclude from the parcels lands identified as habitat for greater sage-grouse. The Proposed Action would include offering at the May 2015 oil and gas lease sale and the subsequent issuance of lease for the aforementioned four parcels, parcels UT0515-012, UT0515-013, UT0515-019 and UT0515-020, with additional resource protection measures consistent with the CBGA RMP (BLM, 1986) and CCFO Programmatic Oil and Gas Leasing EA (BLM, 2009). Legal descriptions for each of the Proposed Action parcels can be found in Appendix A, and a map of the parcels is contained in Appendix B.

Leasing is an administrative action that affects economic conditions but does not directly cause environmental consequences. However, leasing is considered to be an irretrievable commitment of resources because the BLM generally cannot deny all surface use of a lease unless the lease is issued with a no surface occupancy (NSO) stipulation. Potential oil and gas exploration and production activities committed to in a lease sale could impact other resources and uses in the project area. Direct, indirect, or cumulative effects to resources and uses could result from as yet undetermined and uncertain future levels of exploration or development on the proposed lease parcels.

Standard lease terms would be attached to all leases issued for the subject parcels. These standard lease terms provide for reasonable measures to minimize adverse impacts to specific resource values, land uses, or users (the standard lease terms are contained in Form 3100-11, Offer to Lease and Lease for Oil and Gas, BLM, October 2008). Once a lease has been issued, the lessee has the right to use as much of the leased land as necessary to explore for, drill for, extract, remove, and dispose of oil and gas deposits located under the leased lands subject to the standard lease terms and the lease stipulations attached to the lease; however, operations must be conducted in a manner that avoids unnecessary or undue degradation of the environment and

minimizes adverse impacts to the land, air, water, cultural, biological, and visual elements of the environment, as well as other land uses or users.

Compliance with valid, nondiscretionary statutes (laws) is included in the standard lease terms and would apply to all lands and operations that are part of all of the alternatives. The applicable nondiscretionary legal authorities include the BLM's requirements under federal environmental protection laws, such as the Clean Water Act, Clean Air Act, Endangered Species Act (ESA), National Historic Preservation Act (NHPA), NEPA and FLPMA, which are applicable to all actions on federal lands even though they may not be reflected in the oil and gas stipulations in the applicable RMP and would be applied to all potential leases regardless of their "leasing category." Also included in all leases are the two mandatory stipulations for the statutory protection of cultural resources (BLM WO IM-2005-03, Cultural Resources and Tribal Consultation for Fluid Minerals Leasing) and threatened or endangered species (BLM WO IM-2002-174, Endangered Species Act Section 7 Consultation).

Although, at this time, it is unknown when, where, or if future oil and gas development operations might be proposed on any of the proposed leased parcels, the Proposed Action assumes that such developments proposals will follow the issuance of leases for the proposed parcels. For the purposes of analyzing this project, BLM assumed that one well pad and an associated access road would be proposed somewhere on each lease parcel subject to the standard lease terms attached to the parcels. In general, oil and gas development activities that might follow leasing of the proposed parcels are anticipated to take place as described in the following sections of this Chapter and in Chapter 4.

2.2.1 Well Pad and Road Construction

Equipment for well pad construction would consist of dozers, scrapers, and graders. Topsoil from each well pad would be stripped to a depth of six inches and stockpiled for future reclamation. The topsoil stockpile would be seeded with native plant species and left in place for the life of the well, then used during the final reclamation process. The disturbance area for each well pad is estimated to be approximately 350 feet by 250 feet (~2 acres of land), including topsoil piles. For this analysis, it was assumed that disturbance for well pads could be as high as 6 acres per well to account for any infrastructure (e.g., gas pipelines) that would be required if the wells were to go into production (see below). Disturbed land would be seeded with a mixture (certified weed free) and rate as recommended or required by the BLM.

Depending on the locations of the proposed wells it is anticipated that some new or upgraded access roads would be required to access well pads and maintain production facilities. Construction of new roads or upgrades to existing roads would require a 30-foot wide right of way (ROW) and would be constructed of native material. Any new roads constructed for the purposes of oil and gas development would be utilized year-round for maintenance of the proposed wells and other facilities, and for the transportation of fluids and/or equipment, and would remain open to other land users. The type of equipment required for these activities would be the same as that needed for well pad construction. After completion of road construction activities, the 30-foot wide ROW would be reclaimed to an 18-foot wide crowned running surface as well as drainage ditches. It is not possible to determine the distance of road that would be required because the location of the wells would not be known until the APD stage. However, for purposes of analyses it is assumed that disturbance from access roads would be similar to development in other areas (~5 acres of disturbance).

2.2.2 Production Operations

If wells were to go into production, facilities would be located at the well pad and typically include a well head, a dehydrator/separator unit, and storage tanks for produced fluids. The production facility would typically consist of two storage tanks, a truck load-out, separator, and dehydrator facilities. Construction of the production facility would be located on the well pad and not result in any additional surface disturbance.

All permanent surface structures would be painted a flat, non-reflective color (e.g., juniper green) specified by the BLM in order to blend with the colors of the surrounding natural environment. Facilities that are required to comply with the Occupational Safety and Health Act (OSHA) will be excluded from painting color requirements. All surface facilities would be painted immediately after installation and under the direction and approval of the BLM.

If oil is produced, the oil would be stored on location in tanks and transported by truck to a refinery. The volume of tanker truck traffic for oil production would be dependent upon production of the wells, however, it is estimated oil would be transported to a Salt Lake City refinery at least once a week, using 280-barrel tanker trucks.

If natural gas is produced, construction of a gas sales pipeline would be necessary to transport the gas. An additional Sundry Notice, right of way (ROW) and NEPA analysis would be completed, as needed, for any pipelines and/or other production facilities across public lands. BLM BMPs, such as burying the pipeline or installing the pipeline within the road ROW, would be considered at the time of the proposal.

All operations would be conducted following the “Gold Book” Surface Operating Standards for Oil and Gas Exploration and Development. The Gold Book was developed to assist operators by providing information on the requirements for conducting environmentally responsible oil and gas operations on federal lands. The Gold Book provides operators with a combination of guidance and standards for ensuring compliance with agency policies and operating requirements, such as those found at 43 CFR 3000 and 36 CFR 228 Subpart E; Onshore Oil and Gas Orders (Onshore Orders); and Notices to Lessees. Included in the Gold Book are environmental BMPs; these measures are designed to provide for safe and efficient operations while minimizing undesirable impacts to the environment.

Proper planning and consultation, along with the proactive incorporation of these BMPs into the APD Surface Use Plan of Operations (SUPO) by the operator, will typically result in a more efficient APD and environmental review process, increased operating efficiency, reduced long-term operating costs, reduced final reclamation needs, and less impact to the environment.

2.2.3 Produced Water Handling

Water is often associated with either produced oil or natural gas. Water is separated out of the production stream and can be temporarily stored in the reserve pit for 90 days. Wildlife exclusion features would be incorporated into the pit design at the APD stage. Permanent disposal options include surface discharge pits or underground injection. Handling of produced water is addressed in Onshore Oil and Gas Order No. 7.

2.2.4 Maintenance Operations

Traffic volumes during production would be dependent upon whether the wells produced natural gas and/or oil, and for the latter, the volume of oil produced.

Well maintenance operations may include periodic use of work-over rigs and heavy trucks for hauling equipment to the producing well, and would include inspections of the well by a pumper on a regular basis or by remote sensing. The road and the well pad would be maintained for reasonable access and working conditions. Portions of the well pad not needed for production of the proposed well, including the reserve pit, would be recontoured and reclaimed, as an interim reclamation of the site per the SUPO.

2.2.5 Plugging and Abandonment

If the wells do not produce economic quantities of oil or gas, or when it is no longer commercially productive, the well would be plugged and abandoned following procedures approved by a BLM Petroleum Engineer, which would include requiring cement plugs at strategic positions in the well bore. All fluids in the reserve pit would be allowed to dry prior to reclamation work. After fluids have evaporated from the reserve pit, sub-soil would be backfilled and compacted within 90 days. If the fluids within the reserve pit have not evaporated within 90 days (weather permitting or within one evaporation cycle i.e. one summer), the fluid would be pumped from the pit and disposed of in accordance with applicable regulations. The well pad would be recontoured, and topsoil would be replaced, scarified, and seeded within 180 days of the plugging the well.

2.3 Alternative B – No Action

The No Action alternative would not offer any of the nominated parcels for sale.

2.4 Alternatives Considered, but Eliminated from Further Analysis

An alternative was considered that included leasing all ten parcels nominated in the CCFO for the May 2015 oil and gas lease sale. Under this alternative, leasing in areas containing greater sage-grouse brood-rearing and occupied habitat would not be deferred. This alternative was not carried forward.

3.0 AFFECTED ENVIRONMENT

3.1 Introduction

This chapter presents the potentially affected existing environment (i.e., the physical, biological, social, and economic values and resources) of the impact area as identified in the

Interdisciplinary Team Checklist found in Appendix C. This chapter provides the baseline for comparison of impacts/consequences described in Chapter 4. Only those aspects of the affected environment that are potentially impacted are described in detail in Chapters 3 and 4 (see also Appendix C). Resources that are either not present or present, but not affected to a degree where detailed analysis in Chapters 3 and 4 is needed are addressed in Appendix C, Interdisciplinary Team Checklist, of this EA.

3.2 General Setting

The four nominated parcels are located in Beaver County in southwestern Utah. Appendix A contains legal descriptions of the nominated parcels. Appendix B contains maps of the nominated parcels.

The area's land ownership pattern is fragmented, containing private, state, and federally-managed lands. Beaver County is 77.1 percent federal lands (1,994 square miles), 10.3 percent state lands (266 square miles), 12.6 percent private and local government lands (326 square miles) and 0 percent Tribal lands (0 square miles). I-15 traverses north/south along the eastern portion of Beaver County.

The area is located near the eastern boundary of the Basin and Range physiographic province, which generally consists of north-south trending mountain ranges separated by broad arid valleys with interior drainage and vegetated with sagebrush and other plants typical of the Great Basin. The soil in this area consists mostly of aridisols, an iron-rich desert soil, that is used mainly for range, wildlife, and recreation. Because of the dry climate in which they are found, these soils typically are not used for agricultural production unless irrigation water is available. The valleys throughout the region contain a variety of native grasses, junipers, and pinyon pines, while xerophytic and desert scrub vegetation are common in lower and drier areas.

The climate of the area is characterized by cold winters and hot summers – average minimum temperatures are around 17°F (December – January) and average maximum temperatures are in the 90s (July). Average annual precipitation ranges from about 10 to 13 inches depending on elevation, with approximately 50 percent of the moisture coming during the period of plant growth between April and September.

The area has had a relatively long socio-cultural history of resource use and development. Since the late 1800s agricultural pursuits such as farming and cattle and sheep ranching have dominated the character of the general region. More recently, however, the dominance of the agricultural sector on the economy has somewhat given way to the service sector. This is an indication of the heavy reliance of the area's economy on tourism attracted by the several national parks, monuments, and recreation areas of the region. Despite heavy visitation to the region, much of its rural western character has been retained through its small cities and towns and its large open expanses.

3.3 Resources/Issues Brought Forward for Analysis

The affected environment of the Proposed Action and No Action alternatives were considered and analyzed by an interdisciplinary team as documented in the Interdisciplinary Team Checklist, Appendix C. The checklist indicates which resources of concern are either not present

in the project area or would not be impacted to a degree that requires detailed analysis. Resources which could be impacted to a level requiring further analysis are described in this Chapter and impacts to these resources are analyzed in Chapter 4.

3.3.1 Air Quality

Air quality is affected by various natural and anthropogenic factors. Industrial sources such as power plants, mines, and oil and gas extraction activities within Utah contribute to local and regional air pollution. Urbanization and tourism create emissions that affect air quality over a wide area. Air pollutants generated by motor vehicles include tailpipe emissions and dust from travel over dry, unpaved road surfaces. Strong winds can generate substantial amounts of windblown dust.

Air pollution emissions are characterized as point, area, or mobile. Point sources are large, stationary facilities such as power plants and manufacturing facilities and are accounted for on a facility by facility basis. Area sources are smaller stationary sources and, due to their greater number, are accounted for by classes. Production emissions from an oil and gas well and dust from construction of a well pad would be considered area source emissions. Mobile sources consist of non-stationary sources such as cars and trucks. Mobile emissions are further divided into on-road and off-road sources. Engine exhaust from truck traffic to and from oil and gas locations would be considered on-road mobile emissions. Engine exhaust from drilling operations would be considered off road mobile emissions.

The Clean Air Act required the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The Utah Division of Air Quality (UDAQ) is responsible to ensure compliance with the NAAQS within the state of Utah. Table 1 shows NAAQS for the EPA designated criteria pollutants (EPA 2008).

Table 1: National Ambient Air Quality Standards for Harmful Pollutants

Pollutant [final rule cite]		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide [76 FR 54294, Aug 31, 2011]		primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead [73 FR 66964, Nov 12, 2008]		primary and secondary	Rolling 3 month average	0.15 µg/m ³ (1)	Not to be exceeded
Nitrogen Dioxide [75 FR 6474, Feb 9, 2010] [61 FR 52852, Oct 8, 1996]		primary	1-hour	100 ppb	98th percentile, averaged over 3 years
		primary and secondary	Annual	53 ppb (2)	Annual Mean
Ozone [73 FR 16436, Mar 27, 2008]		primary and secondary	8-hour	0.075 ppm (3)	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution [71 FR 61144, Oct 17, 2006]	PM _{2.5}	primary and secondary	Annual	15 µg/m ³	annual mean, averaged over 3 years
			24-hour	35 µg/m ³	98th percentile, averaged over 3 years
	PM ₁₀	primary and secondary	24-hour	150 µg/m ³	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide [75 FR 35520, Jun 22, 2010] [38 FR 25678, Sept 14, 1973]		primary	1-hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

as of October 2011

(1) Final rule signed October 15, 2008. The 1978 lead standard (1.5 µg/m³ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

(2) The official level of the annual NO₂ standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.

(3) Final rule signed March 12, 2008. The 1997 ozone standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, EPA revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard (“anti-backsliding”). The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.

(4) Final rule signed June 2, 2010. The 1971 annual and 24-hour SO₂ standards were revoked in that same rulemaking. However, these standards remain in effect until one year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.

National Ambient Air Quality Standards Criteria Pollutants

Particulate Matter (PM10 AND PM2.5)

Airborne particulate matter consists of tiny coarse-mode (PM10) or fine-mode (PM2.5) particles or aerosols combined with dust, dirt, smoke, and liquid droplets. PM2.5 is derived primarily from the incomplete combustion of fuel sources and secondarily formed aerosols. PM10 is derived primarily from crushing, grinding, or abrasion of surfaces. Sources of particulate matter include industrial processes, power plants, mobile sources (vehicle exhaust and road dust), construction activities, home heating, and fires. Particulate matter causes a variety of health and environmental impacts. Many scientific studies have linked breathing particulate matter to serious health problems, including aggravated asthma, increased respiratory symptoms (e.g., coughing), difficult or painful breathing, chronic bronchitis, decreased lung function, and premature death. Particulate matter is the major cause of reduced visibility. It can stain and damage stone and other materials, including culturally important objects, such as monuments and statues.

Ozone

Ground-level ozone is a secondary pollutant. It is formed by a chemical reaction between nitrogen oxides (NOx) and volatile organic compounds (VOCs) in the presence of sunlight (photochemical oxidation). Precursor sources of NOx and VOCs include motor vehicle exhaust, industrial emissions, gasoline vapors, vegetation emissions (i.e., terpenes), wood burning, and chemical solvents. The abundant sunlight during the summer months drives the photochemical process and creates ground-level ozone; therefore, ozone is generally considered a summertime air pollutant.

Ozone is a regional air quality issue because, along with its precursors, it can transport hundreds of miles from its origins, and maximum ozone levels can occur at locations many miles downwind from the sources. Primary health effects from ozone exposure range from breathing difficulty to permanent lung damage. Significant ground-level ozone also contributes to plant and ecosystem damage.

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless gas emitted from combustion processes. Nationally and, particularly in urban areas, the majority of CO emissions to ambient air come from mobile sources. CO can cause harmful health effects by reducing oxygen delivery to the body's organs (like the heart and brain) and tissues.

Nitrogen Oxides

Nitrogen dioxide (NO₂) is one of a group of highly reactive gasses known as "oxides of nitrogen," or "nitrogen oxides (NOx)." Other nitrogen oxides include nitrous acid and nitric acid. While EPA's National Ambient Air Quality Standard covers this entire group of NOx, NO₂ is the component of greatest interest and the indicator for the larger group of nitrogen

oxides. NO₂ forms quickly from emissions from cars, trucks and buses, power plants, and off-road equipment. In addition to contributing to the formation of ground-level ozone, and fine particle pollution, NO₂ is linked with a number of adverse effects on the respiratory system.

Lead

Lead (Pb) is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been from fuels in on-road motor vehicles (such as cars and trucks) and industrial sources. As a result of EPA's regulatory efforts to remove lead from on-road motor vehicle gasoline, emissions of lead from the transportation sector dramatically declined by 95 percent between 1980 and 1999, and levels of lead in the air decreased by 94 percent between 1980 and 1999. Today, the highest levels of lead in air are usually found near lead smelters. The major sources of lead emissions to the air today are ore and metals processing and piston-engine aircraft operating on leaded aviation gasoline.

Sulfur Dioxide

Sulfur dioxide (SO₂) is one of a group of highly reactive gasses known as “oxides of sulfur.” The largest sources of SO₂ emissions are from fossil fuel combustion at power plants (73%) and other industrial facilities (20%). Smaller sources of SO₂ emissions include industrial processes such as extracting metal from ore, and the burning of high sulfur containing fuels by locomotives, large ships, and non-road equipment. SO₂ is linked with a number of adverse effects on the respiratory system.

Prevention of Significant Deterioration

Under the Prevention of Significant Deterioration (PSD) provisions of the Clean Air Act (CAA), incremental increases of specific pollutant concentrations are limited above a legally defined baseline level. Many national parks and wilderness areas are designated as PSD Class I. The PSD program protects air quality within Class I areas by allowing only slight incremental increases in pollutant concentrations. Areas of Utah not designated as PSD Class I are classified as Class II. For Class II areas, greater incremental increases in ambient pollutant concentrations are allowed as a result of controlled growth.

Air Quality Related values

Air Quality Related Values (AQRVs) are resources applied to all PSD Class I and sensitive Class II areas that may be affected by changes in air quality. AQRVs include visibility, dark night skies, vegetation, wildlife, and soils. Visibility is the most sensitive AQRV in the parks. Visibility is impaired by haze caused by tiny particles that scatter and absorb light. Sulfates, crustal materials, organic carbon, elemental carbon, and nitrates, in order of decreasing contributions, comprise particles that result in the formation of haze in the western U.S. Sulfates and crustal materials are responsible for over 50 percent of the causes of visibility impairment. Sulfate particles are formed from sulfur dioxide gas released from coal-burning power plants and

other industrial sources. Crustal materials are windborne dust particles from dirt roads and other open spaces. The EPA's Regional Haze regulations required states to establish goals for each Class I air quality area to improve visibility on the haziest days and ensure no degradation occurs on the clearest days. The 2008 Government Performance and Results Act (GPRA) set goals for air quality for parks on the northern Colorado Plateau, including Canyonlands and Arches NPs. While an AQRV reflects a land management agency's policy and is not a legally enforceable standard, federal regulations such as the EPA's Regional Haze rule and GPRA ensure the protection of some AQRVs.

Some aspects of air quality are monitored for Canyonlands and Arches NPs. Long-term visibility monitoring in Canyonlands NP determined that on the clearest and haziest days, this park exhibited a statistically significant improving trend (National Park Service [NPS], 2010a). During the 20 percent clearest days at Canyonlands NP, or when visibility is very good, atmospheric sulfates were identified as the largest contributor to impaired visibility; however, during the 20 percent haziest days, or when visibility is impaired, coarse particulate matter is the largest contributor to haze (Perkins, 2010). Increasing ozone concentrations also correspond to decreasing visibility (Aneja et al., 2004). Monitored ozone concentrations in Canyonlands NP were assessed as "moderate," but trend data are not available. Between 1993 and 2008, ozone levels in Canyonlands NP have generally remained under, but close to, the standard. In 2012, one ozone exceedance was measured in May and one in June. The 4th highest maximum 8-hour measurement to-date in 2012 was 72 parts per billion (NPS, 2012). Visibility at Arches NP was assessed as moderate, showing no trend. Ozone levels are not monitored at Arches NP. The National Park Service Air Resources Division expects air quality in both parks to improve as regulations that reduce tailpipe emissions from motor vehicles and pollution from electric-generating facilities take full effect over the next few years (NPS, 2010).

Soils and vegetation in the parks may be sensitive to nutrient enrichment from deposition of atmospheric nitrates and sulfates, which contribute to soil and water acidification. Fertilizer use, motor vehicles, and agricultural activities produce ammonia, which contribute to nitrogen deposition. Ammonia can be emitted from light duty vehicles, depending on fuel types and operational condition. Ammonium results primarily from crop and livestock production (NPS, 2006a). Increased nitrogen loading levels from deposition of ammonium has been observed at Canyonlands NP (NPS, 2010a); however, surface waters and soils in Canyonlands and Arches NPs, with the exception of potholes, are generally well-buffered and are not likely to be acidified by atmospheric deposition (NPS, 2006).

Table 2: Air Quality and AQRV Trends in Nearby National Parks

National Park	Visibility	Nitrogen Deposition	Sulfur Deposition	Ozone
Arches NP	Moderate condition, no trend.	No data.	No data.	No data.
Canyonlands	Moderate	Good; no trend.	Good; no trend.	Moderate

NP	condition, no trend.			condition, no trend.
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Source: NPS, 2010a

Hazardous Air Pollutants

Hazardous air pollutants (HAPs) are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental impacts. The EPA has classified 187 air pollutants as HAPs. Examples of listed HAPs associated with the oil and gas industry include formaldehyde, benzene, toluene, ethylbenzene, isomers of xylene (BTEX) compounds, and normal-hexane (n-hexane).

The CAA requires the EPA to regulate emissions of toxic air pollutants from a published list of industrial sources referred to as “source categories.” The EPA has developed a list of source categories that must meet control technology requirements for these toxic air pollutants. Under Section 112(d) of the CAA, the EPA is required to develop regulations establishing national emission standards for hazardous air pollutants (NESHAP) for all industries that emit one or more of the pollutants in major source quantities. These standards are established to reflect the maximum degree of reduction in HAP emissions through application of maximum achievable control technology (MACT). Source categories for which MACT standards have been implemented include oil and natural gas production and natural gas transmission and storage.

There are no applicable federal or State of Utah ambient air quality standards for assessing potential HAP impacts to human health, and monitored background concentrations are rarely available. Therefore, reference concentrations (RfC) for chronic inhalation exposures and reference exposure levels (REL) for acute inhalation exposures are applied as significance criteria. Table 3 provides the RfCs and RELs. RfCs represent an estimate of the continuous (i.e., annual average) inhalation exposure rate to the human population (including sensitive subgroups such as children and the elderly) without an appreciable risk of harmful effects. The RELs represent the acute (i.e., 1-hour average) concentration at or below which no adverse health effects are expected. Both the RfC and REL guideline values are for non-cancer effects.

Table 3.

Hazardous Air Pollutant (HAP) Reference Exposure Levels and Reference Concentrations (RfCs)

HAP	Reference Exposure Level (REL 1-hour Average) ($\mu\text{g}/\text{m}^3$)	Reference Concentration ^a (RfC Annual Average) ($\mu\text{g}/\text{m}^3$)
Benzene	1,300 ^{b, c}	30
	160,000 ^d	-
Toluene	37,000 ^b	5,000
Ethylbenzene	350,000 ^d	1,000
Xylenes	22,000 ^b	100
n-Hexane	390,000 ^d	700
Formaldehyde	94 ^b	9.8

^a EPA Air Toxics Database, Table 1 (EPA 2007a)

^b EPA Air Toxics Database, Table 2 (EPA 2007a) REL from California EPA (most conservative level in Table 2)

^c REL for benzene is for a 6-hour average.

^d Immediately Dangerous to Life or Health/10, EPA Air Toxics Database, Table 2 (EPA 2007a) because no REL is available.

Greenhouse Gases (GHGs)

The Council on Environmental Quality (CEQ) has released new (2010) draft guidance on how the National Environmental Policy Act (NEPA) should consider and evaluate greenhouse gas (GHG) emissions and climate change. The draft guidance outlines how federal agencies should consider climate change issues under NEPA. Under this draft guidance, where a proposed federal action would be reasonably anticipated to emit greenhouse gases into the atmosphere in quantities that the agency preparing the NEPA document finds may be “meaningful,” the agency should quantify and disclose its estimate of the expected, annual direct and indirect greenhouse gas emissions. Specifically, where a proposed action is anticipated to cause direct, annual emissions of 25,000 metric tons or more of carbon dioxide (CO₂)-equivalent greenhouse gas emissions, a quantitative and qualitative assessment is required together with the consideration of mitigation measures and reasonable alternatives to reduce greenhouse gas emissions.

Several factors affect climate change, including but not limited to GHGs, land use management practices, and the albedo effect. GHGs are produced and emitted by various sources during phases of oil and gas exploration, well development, and production. The primary sources of GHGs associated with oil and gas exploration and production are CO₂, nitrous oxide (N₂O), and methane (CH₄). In addition, VOCs are a typical source of emissions associated with oil and gas exploration and production. Under specific environmental conditions, N₂O and VOCs form ozone, which also is considered a GHG.

On October 30, 2009, the EPA issued the final mandatory reporting rule for major sources of GHG emissions. The rule requires a wide range of sources and source groups to record and report selected GHG emissions, including CO₂, CH₄, N₂O, and some halogenated compounds. The EPA delayed a comparable rule for GHG emissions for various natural gas industry groups. On December 31, 2010, a rule (Subpart W) became effective that addressed natural gas systems and natural gas transmission source groups, among other things.

The final rule (Subpart W) for natural gas systems specifically identified monitoring and reporting requirements for oil and natural gas systems. The oil and natural gas source category includes on-shore natural gas processing facilities and on-shore natural gas transmission compression facilities, which are applicable components of the proposed project. Combustion units associated with these processes also are included as part of the separate final rule. The EPA final rule concerning mandatory reporting of GHGs do not require any controls or establish any standards related to GHG emissions or impacts.

Additionally, in June of 2010, the EPA finalized the Greenhouse Gas Tailoring Rule. The rule outlines the time frame and the applicability criteria that determine which stationary sources and modification projects become subject to permitting requirements for GHG emissions under the CAA's PSD and Title V programs.

Global mean surface temperatures increased nearly 1.8°F from 1890 to 2006. Models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Northern latitudes (above 24°N) have exhibited temperature increases of nearly 2.1°F since 1900, with a nearly 1.8°F increase since 1970. Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change.

Ongoing scientific research has identified the potential impacts of anthropogenic (manmade) GHG emissions and changes in biological carbon sequestration due to land management activities for a global climate. Through complex interactions on a regional and global scale, these GHG emissions and net losses of biological carbon sinks cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied throughout Earth's history, recent industrialization and burning of fossil carbon sources have caused atmospheric CO₂(e) concentrations to increase dramatically, and are likely to contribute to overall global climatic changes.

The IPCC (Intergovernmental Panel on Climate Change) recently concluded that warming of the climate system is unequivocal, and most of the observed increase in globally average temperatures since the mid twentieth century is very likely due to the observed increase in anthropogenic GHG concentrations (IPCC 2007).

In 2001, the IPCC projected that by the year 2100, global average surface temperatures could increase by 2.5°F to 10.4°F above 1990 levels. The National Academy of Sciences (2010) has confirmed these projections, but also has indicated that there are uncertainties regarding how climate change may affect different regions. Computer model predictions indicate that increases in temperature would not be equally distributed, but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures are more likely than increases in daily maximum temperatures. Although large-scale spatial shifts in precipitation distribution may occur, these changes are more uncertain and difficult to predict.

Written in the IPCC Fourth Assessment Report: Climate Change 2007, an expert assessment based on the combination of available constraints from observations and the strength of known

feedbacks simulated in the models used to produce the climate change projections indicates that the equilibrium global mean surface air temperature (SAT) warming for a doubling of atmospheric carbon dioxide (CO₂), or ‘equilibrium climate sensitivity’, is *likely* to lie in the range 2°C to 4.5°C, with a most likely value of about 3°C. Equilibrium climate sensitivity is *very likely* larger than 1.5°C. For fundamental physical reasons, as well as data limitations, values substantially higher than 4.5°C still cannot be excluded, but agreement with observations and proxy data is generally worse for those high values than for values in the 2°C to 4.5°C range. The ‘transient climate response’ (TCR, defined as the globally averaged SAT change at the time of CO₂ doubling in the 1% yr⁻¹ transient CO₂ increase experiment) is better constrained than equilibrium climate sensitivity. The TCR is *very likely* larger than 1°C and *very unlikely* greater than 3°C based on climate models, in agreement with constraints from the observed surface warming. (http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch10s10-es-1-mean-temperature.html)

The analysis of the Regional Climate Impacts prepared by the United States Global Change Research Program (USGCRP) (2009) suggests that recent warming in the region was among the most rapid nationally. They conclude that this warming is causing decline in spring snowpack and reducing flow in the Colorado River. Their projections of future climate change indicate that further strong warming will reduce precipitation, which in turn will strain regional water supplies, increase the risk of wildfires and invasive species, and degrade recreational opportunities.

Past records and future projections predict an overall increase in regional temperatures, which would cover the development area. As has been observed at many sites to date, the observed increase is largely the result of the warmer nights, and effectively higher average daily minimum temperatures at many of the sites in the region. The USGCRP (2009) projects a region-wide decrease in precipitation, although with substantial variability in inter-annual conditions. For eastern Utah, the projections range from an approximately 5% decrease in annual precipitation to decreases as high as 40% of annual precipitation.

As with any field of scientific study, there are uncertainties associated with the science of climate change; however, this does not imply that scientists do not have confidence in many aspects of climate change science. Some aspects of the science are known with virtual certainty because they are based on well-known physical laws and documented trends.

The Color County District has existing sources of atmospheric pollution that vary mainly from regional ozone to particulate matter. Regional ozone is typical in the western states as forest fires, transport from shipping lanes, electric power generation and a conglomerate of other sources combine under certain meteorological conditions. Particulate matter is mobilized during dust storms and other activities in this dry region.

Table 4: Division of Air Quality – 2011 Annual Report, Triennial Inventory (tons/year)

County	CO	NO _x	PM10	PM2.5	SO _x	VOC
Beaver	12,406.83	2,192.19	1,354.23	274.28	102.42	31,624.33

The following meteorological data are taken from sites with an average and current length of history from the Western Regional Climate Center. These sites may be used in a planning process but should not solely be limited to these depending on the applicant.

Table 5: CEDAR CITY FAA AIRPORT, UTAH (421267)

Period of Record Monthly Climate Summary

Period of Record : 7/ 1/1948 to 9/30/2012

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	42.0	46.5	53.7	62.0	72.3	83.6	90.2	87.7	79.9	67.2	52.8	43.0	65.1
Average Min. Temperature (F)	17.2	21.5	26.7	32.9	40.8	49.3	57.7	56.3	46.8	35.6	25.1	17.7	35.6
Average Total Precipitation (in.)	0.76	0.90	1.20	1.01	0.84	0.48	0.99	1.11	0.77	1.04	0.88	0.76	10.74
Average Total SnowFall (in.)	8.5	8.0	8.4	5.1	1.2	0.1	0.0	0.0	0.1	1.7	5.1	7.0	45.1
Average Snow Depth (in.)	2	1	0	0	0	0	0	0	0	0	0	1	0

Table 6: ANGLE, UTAH (420168)

Period of Record Monthly Climate Summary

Period of Record : 7/ 1/1981 to 12/31/2005

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	41.5	45.6	53.0	60.3	70.1	79.9	86.5	83.9	76.6	65.5	51.3	42.7	63.1
Average Min. Temperature (F)	6.9	13.4	20.5	25.7	33.4	39.3	45.6	45.4	36.0	25.5	16.2	8.1	26.3
Average Total Precipitation (in.)	0.43	0.36	0.71	0.71	0.80	0.71	0.90	1.52	1.14	1.00	0.44	0.28	8.99
Average Total SnowFall (in.)	5.0	3.7	3.7	1.9	0.4	0.0	0.0	0.0	0.0	0.4	2.1	2.9	20.2
Average Snow Depth (in.)	1	0	0	0	0	0	0	0	0	0	0	0	0

Table 7: LYTLE RANCH, UTAH (425252)
Period of Record Monthly Climate Summary
Period of Record : 7/ 1/1988 to 12/31/2005

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	57.9	61.0	68.6	77.0	86.9	95.1	101.8	100.1	93.2	80.3	65.8	57.2	78.7
Average Min. Temperature (F)	28.2	31.8	36.1	41.4	48.9	55.4	61.0	59.7	52.0	41.6	31.4	25.7	42.8
Average Total Precipitation (in.)	1.63	2.08	1.59	0.76	0.40	0.30	0.55	0.69	0.59	0.87	0.70	0.55	10.72
Average Total SnowFall (in.)	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.7
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 8: ZION NATIONAL PARK, UTAH (429717)
Period of Record Monthly Climate Summary
Period of Record : 1/ 2/1928 to 12/31/2005

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	51.9	56.9	63.9	72.8	83.0	93.8	99.6	97.0	90.1	78.0	62.8	53.1	75.2
Average Min. Temperature (F)	29.0	32.6	37.0	43.6	52.2	61.3	68.6	67.2	60.3	49.3	36.9	30.0	47.3
Average Total Precipitation (in.)	1.67	1.84	1.91	1.17	0.79	0.47	0.99	1.42	1.06	1.07	1.23	1.34	14.97
Average Total SnowFall (in.)	3.4	1.7	1.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.6	2.0	8.9
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 9: Central Utah Average Wind Speeds

AVERAGE WIND SPEED - MPH																	
STATION	ID	Years		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		Ann
BRYCE CANYON AP ASOS	KBCE	2000-2006		8.0	8.5	9.0	10.4	9.6	9.8	8.2	8.0	8.7	8.2	7.9	7.5		8.6
CEDAR CITY AIRPORT ASOS	KCDC	1996-2006		6.1	6.5	7.3	8.7	8.3	8.6	7.5	7.4	7.0	6.4	5.9	6.1		7.1
MILFORD AIRPORT ASOS	KMLF	1996-2006		9.9	9.7	11.0	12.2	11.5	12.1	11.4	11.1	10.1	10.0	9.5	9.9		10.7
ST GEORGE AIRPORT AWOS	KSGU	1996-2006		3.4	4.6	5.8	7.7	8.3	8.5	7.8	7.3	6.2	4.7	3.4	3.2		5.9

Table 10: Central Utah Prevailing Wind Direction

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
CEDAR CITY AP, UT (KCDC)	SS W	SW	SS W	SS W	SS W	SS W	SW	SS W	SS W	SW	N	SS W	SS W
MILFORD AIRPORT, UT (KMLF)	S	SS W	S	SS W	S	SS W	SS W	S	S	S	S	S	S
ST. GEORGE MUNI AP, UT (KSGU)	E	ENE	ENE	W	W	W	W	ENE	ENE	ENE	E	E	ENE
BRYCE CANYON AP, UT (KBCE)	W	W	W	W	W	W	W	W	W	W	W	W	W

3.3.2 Socioeconomic Impacts

Beaver County has a rural, agricultural-based economy. The US Census Bureau shows Beaver County's population is 6,629 (based on the 2010 census). The population is mostly dispersed into small communities. Beaver, the county seat, has a population of approximately 3,112 (2010)

census) and is the largest town in the county. The county's economy is currently based on livestock, tourism, and trade.

4.0 ENVIRONMENTAL IMPACTS

4.1 Introduction

This chapter discusses the environmental consequences of implementing the alternatives described in Chapter 2. Under NEPA, actions with the potential to affect the quality of the human environment must be disclosed and analyzed in terms of direct and indirect effects—whether beneficial or adverse and short or long term—as well as cumulative effects. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects are caused by an action and occur later or farther away from the resource but are still reasonably foreseeable. Beneficial effects are those that involve a positive change in the condition or appearance of a resource or a change that moves the resource toward a desired condition. Adverse effects involve a change that moves the resource away from a desired condition or detracts from its appearance or condition. Cumulative effects are the effects on the environment that result from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions.

The No Action alternative (offer none of the nominated parcels for sale), serves as a baseline against which to evaluate the environmental consequences of the Proposed Action alternative (defer six of the nominated parcels and offer four of the parcels for sale with additional resource protective measures). For each alternative, the environmental effects are analyzed for the resource topics that were carried forward for analysis in Chapter 3.

4.2 General Analysis Assumptions and Guidelines

Leasing is an administrative action that affects economic conditions but does not directly cause environmental consequences. However, leasing is considered to be an irretrievable commitment of resources because the BLM generally cannot deny all surface use of a lease unless the lease is issued with a No Surface Occupancy stipulation. Potential oil and gas exploration and production activities, committed to in a lease sale, could impact resources and uses in the planning area. Direct, indirect or cumulative effects to resources and uses could result from as yet undetermined and uncertain future levels of lease exploration or development. In order to provide a basis for analysis, the RFD scenario is applied to each of the alternatives analyzed in detail. The RFD scenario is a long term projection of oil and gas exploration, development, production, and reclamation activity in a defined area for a specified period of time and serves as an analytical baseline for identifying and quantifying direct, indirect, and cumulative effects of oil and gas activity, under standard lease terms and conditions, on all potentially productive areas open to oil and gas and leasing, and forms the foundation for the analysis of the effects of oil and gas management decisions.

Although no site-specific activities are specified, analysis of projected surface disturbance impacts, should a lease be developed, was estimated based on the RFD in the supplemental EA for Oil and Gas Leasing, Cedar City District, prepared in 1988 (BLM, 1988). If leases are

offered, purchased and issued, typical subsequent developments may include the construction of a well pad with access roads and associated facilities. Detailed site specific analysis of individual wells or roads would occur when a lease holder submits an APD. This EA would be used to determine the necessary administrative actions, stipulations, lease notices, special conditions, or restrictions that would be made a part of an actual lease at the time of issuance. Under all alternatives, continued interdisciplinary support and consideration would be required to ensure on the ground implementation of planning objectives, including the proper implementation of stipulations, lease notices and Best Management Practices (BMPs) through the APD process.

Standard lease terms provide for reasonable measures to minimize adverse impacts to specific resource values, land uses, or users (Standard Lease Terms are contained in Form 3100-11, Offer to Lease and Lease for Oil and Gas, U.S. Department of the Interior, BLM, June 1988 or later edition). Although once the lease has been issued, the lessee has the right to use as much of the leased land as necessary to explore for, drill for, extract, remove, and dispose of oil and gas deposits located under the leased lands, operations must be conducted in a manner that avoids unnecessary or undue degradation of the environment and minimizes adverse impacts to the land, air, water, cultural, biological, and visual elements of the environment, as well as other land uses or users. Compliance with valid, nondiscretionary statutes (laws) is included in the standard lease terms and would apply to all lands and operations that are part of all of the alternatives. Nondiscretionary actions include the BLM's requirements under federal environmental protection laws, such as the Clean Water Act, Clean Air Act, ESA, NHPA, and FLPMA, which are applicable to all actions on federal lands even though they are not reflected in the oil and gas stipulations in the RMP and would be applied to all potential leases regardless of their category. Also included in all leases are the two mandatory stipulations for the statutory protection of cultural resources (BLM Washington Office Instruction Memorandum No. 2005-03, Cultural Resources and Tribal Consultation for Fluid Minerals Leasing) and threatened or endangered species (BLM Washington Office Instruction Memorandum No. 2002-174, Endangered Species Act Section 7 Consultation). BLM would also encourage industry to consider participating in EPA's Natural Gas STAR program under all alternatives. The program is a flexible, voluntary partnership between EPA and the oil and natural gas industry wherein EPA works with companies that produce, process, transmit and distribute natural gas to identify and promote the implementation of cost-effective technologies and practices to reduce emissions of methane, a greenhouse gas.

4.2.1 Reasonably Foreseeable Development

As described above, the RFD scenario serves as an analytical baseline for identifying and quantifying direct, indirect, and cumulative effects of oil and gas activity and forms the foundation for the analysis of the effects of oil and gas management decisions in planning and environmental documents. The EAR, RMP, Supplemental EA, and Programmatic EA (BLM 1976; BLM 1986; BLM 1988; BLM 2009) describe in detail fluid minerals leasing and operations and RFD scenarios for Beaver County. In those analyses it was estimated based on past drilling history that exploratory wells would continue to be drilled at the rate of about three wells per year for the foreseeable future. It was further estimated that the drilling targets would continue to be primarily anticlinal structures in the eastern part of the district where quantities were anticipated to be low. Between 1988 and 2006, five oil and gas exploration wells were drilled on public lands in Beaver and Iron Counties disturbing about 12 acres. The current rate of drilling, extent of disturbance, and magnitude of impacts are within the projection made in the

Supplemental EA. A much smaller number of wells and surface disturbance has occurred since completion of that analysis. None of the wells were economically productive, and no oil and gas field developments have occurred. Consequently, the impact analysis is appropriate and within the range of those described in the Supplemental EA. If there is a discovery, the RFD scenario would change in which case additional NEPA analysis would be required.

For the purposes of this analysis, the main assumption is that the RFD over a 10-year period would be 30 exploratory wells ($3 \text{ wells/year} \times 10 \text{ years}$), with a 180-acre disturbance from well sites ($2 \text{ to } 6 \text{ acres/well} \times 30 \text{ wells} = 180 \text{ acres maximum}$) and a 150-acre disturbance from access roads ($40 \text{ feet maximum road width disturbed} \times \text{average of } 1 \text{ mile access road length} = 5 \text{ acres} \times 30 \text{ wells} = 150 \text{ acres maximum}$) for a total disturbance of 330 acres (180 acres from well sites and 150 acres from access roads). These assumptions were determined to be reasonable because only about 12 acres have been disturbed in the Cedar City District from 1988 to 2006 from fluid mineral leasing activity, representing a much smaller number of wells and surface disturbance than anticipated in the Supplemental EA analysis. Thus the impacts of leasing under the alternatives analyzed in this EA are not expected to surpass or differ significantly from the effects analyzed previously; therefore the RFD scenario is still reasonable based on the actual level of activity that has occurred since planning which is well within the projected scenario.

4.3 Direct and Indirect Impacts

Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.

4.3.1 Alternative A – Proposed Action

This section analyzes the impacts of the proposed action to those potentially impacted resources described in the Affected Environment (Chapter 3).

4.3.1.1 Air Quality

The act of leasing would not result in changes to air quality. However, should the leases be issued, development of those leases could impact air quality conditions. It is not possible to accurately estimate potential air quality impacts by computer modeling from the project due to the variation in emission control technologies as well as construction, drilling, and production technologies applicable to oil versus gas production and utilized by various operators, so this discussion remains qualitative.

Prior to authorizing specific proposed projects on the subject lease parcels quantitative computer modeling using project specific emission factors and planned development parameters (including specific emission source locations) may be conducted to adequately analyze direct and indirect potential air quality impacts. In conducting subsequent project-specific analysis BLM will follow the policy and procedures of the National Interagency MOU Regarding Air Quality Analysis and Mitigation for Federal Oil and Gas Decisions through NEPA, and the FLAG 2010 air quality guidance document. Air quality dispersion modeling which may be required includes impact analysis for demonstrating compliance with the NAAQS, plus analysis of impacts to Air Quality

Related Values (i.e. deposition, visibility), particularly as they might affect regional Class 1 areas (national parks and wilderness areas).

An oil or gas well, including the act of drilling, is considered to be a minor source under the Clean Air Act. Minor sources are not controlled by regulatory agencies responsible for implementing the Clean Air Act. In addition, control technology is not required by regulatory agencies at this point, since all of the parcels occur in NAAQS attainment areas. Different emission sources would result from the two site specific lease development phases: well development and well production. The BLM does look to mitigate pollutants via lease stipulations and further NEPA actions throughout the lease process.

Well development includes emissions from earth-moving equipment, vehicle traffic, drilling, and completion activities. NO_x, SO₂, and CO would be emitted from vehicle tailpipes. Fugitive dust concentrations would increase with additional vehicle traffic on unpaved roads and from wind erosion in areas of soil disturbance. Drill rig and fracturing engine operations would result mainly in NO_x and CO emissions, with lesser amounts of SO₂. These temporary emissions would be short-term during the drilling and completion times.

During well production there are continuous emissions from separators, condensate storage tanks, and daily tailpipe and fugitive dust emissions from operations traffic. During the operational phase of the Proposed Action, NO_x, CO, VOC, and HAP emissions would result from the long-term operation of condensate storage tank vents, and well pad separators. Additionally, road dust (PM₁₀ and PM_{2.5}) would be produced by vehicles servicing the wells.

Project emissions of ozone precursors, whether generated by construction and drilling operations, or by production operations, would be dispersed and/ or diluted to the extent where any local ozone impacts from the Proposed Action would be indistinguishable from background or cumulative conditions. The primary sources of HAPs are from oil storage tanks and smaller amounts from other production equipment. Small amounts of HAPs are emitted by construction equipment. However, these emissions are estimated to be less than 1 ton per year. Based on the negligible amount of project-specific emissions, the Proposed Action is not likely to violate, or otherwise contribute to any violation of any applicable air quality standard, and may only contribute a small amount to any projected future potential exceedance of any applicable air quality standards.

The construction, drilling, completion, testing, and production of an oil and gas well could result in various emissions that affect air quality. Construction activities result in emissions of particulate matter. Well drilling activities result in engine exhaust emissions of NO_x, CO, and VOC. Completion and testing of the well result in emissions of VOC, NO_x, and CO. Ongoing production results in the emission of NO_x, CO, VOC, and particulate matter.

Due to the very small level of anticipated development, an emissions inventory (EI) has not been conducted for this lease sale. A typical oil and gas well EI is estimated for the purpose of this analysis and is based on the following assumptions:

- Each oil and gas well would cause 12 acres of surface disturbance. This acreage includes access.
- Construction activity for each well is assumed to be 10 days. It is further assumed that, based on the acreage disturbed, 4.5 days would be spent in well pad construction and 5.5 days would be spent in road and pipeline construction.

- Control efficiency of 25% for dust suppression would be achieved as a result of compliance with Utah Air Quality regulation R307-205.
- Post construction particulate matter (dust) emissions are likely to occur on a short term basis due to loss of vegetation within the construction and staging areas. Assuming appropriate interim reclamation, these emissions are likely to be minimal to negligible and will not be considered in this EA.
- Drilling operations would require 21-60 days.
- Completions and testing operations would require 3 days.
- Off road mobile exhaust emissions from heavy equipment during construction activities and on road mobile emissions would not be considered as they are dispersed, sporadic, temporary, and not likely to cause or contribute to exceedance of the NAAQS.

If exploration occurs, short-term impacts would be stabilized or managed rapidly (within two to five years), and long-term impacts are those that would substantially remain for more than five years. An air quality best management practice (BMP) which discusses the amounts of NO_x emission per horse-power hour based on internal combustion engine size, would be attached to all parcels.

Emission factors for activities of the Proposed Action were based on information contained in the EPA's Emission Factors & AP 42, Volume I, Fifth Edition (EPA.1995), available at: <http://www.epa.gov/ttn/chief/ap42/index.html>.

The production emissions from oil storage tanks was estimated based on the emission factor contained in the Colorado Department of Public Health and Environment PS Memo 05-01, Oil & Gas Atmospheric Condensate Storage Tank Batteries Regulatory Definitions and Permitting Guidance (CDPHE 2009), available at: <http://www.cdphe.state.co.us/ap/down/ps05-01.pdf>.

Table 11: Emissions Estimate

	Construction Emissions (Tons)	Drilling Emissions (Tons)			Completions Emissions (Tons)				Ongoing Production Emissions (Tons/year)			
	PM ₁₀	NO _x	CO	VOC	VOC	NO _x	CO	PM ₁₀	NO _x	CO	VOC	PM ₁₀
Typical Well	0.34	13.31	1.83	0.23	0.85	0.07	0.07	0.00	0.01	0.01	6.44	0.00000
Sub Total	0.34	13.31	1.83	0.23	0.85	0.07	0.07	0.00	0.01	0.01	6.44	0.00000
					PM ₁₀	NO _x	CO	VOC				
Activity Emissions (Total emissions for drilling and					0.34	13.37	1.89	1.08	Tons			

completion the well)								
Production Emissions (Ongoing annual emissions for the well)	0.00000	0.01	0.01	6.44	tpy			

Based on the emissions estimates contained in Table 11, and considering the location of the proposed leasing relative to population centers and Class 1 areas, substantial air resource impacts are not anticipated as a result of this leasing action, and no further analysis or modeling is warranted. Emissions resulting from the lease sale are not likely to result in major impacts to air quality nor are they likely to cause a violation of the NAAQS. Emissions of GHGs are also anticipated to be relatively minor and result in no discernible impact on global or local climate patterns.

Additional air quality control measures may be warranted and imposed at the APD stage. These control measures are dependent on future regional modeling studies, other analysis or changes in regulatory standards. As such, a lease notice would be appropriate to inform an operator or the general public that additional air quality control measures would be pursued. Lease notices UT-LN-99 (Regional Ozone Formation Controls) and UT-LN-102 (Air Quality Analysis) would be attached to all lease parcels.

To address oil and gas development emissions may have on regional ozone formation, the following Best Management Practices (BMPs) would be required through a lease notice (UT-LN-99, Regional Ozone Formation Controls) for any development projects related to this lease sale:

- Tier II or better drilling rig engines
- Stationary internal combustion engine standard of 2g NOx/bhp-hr for engines <300HP and 1g NOx/bhp-hr for engines >300HP
- Low bleed or no bleed pneumatic pump valves
- Dehydrator VOC emission controls to +95% efficiency
- Tank VOC emission controls to +95% efficiency

4.3.1.2 Socioeconomic Impacts

The social and economic environment of Beaver County would be positively affected by the proposed project. Exploratory drilling of oil and gas in the project area would contribute to the local economy by providing several benefits: short-term employment opportunities for construction, drilling and completion; monies to local contractors; and revenues recycled into the area's local economy. Additional revenues would be generated in the form of sales taxes and income taxes. Local workers would potentially be used in much of the project work, and they would likely spend much of their income in local economies, thus producing a "multiplier effect" that could be at least 1.5 times the revenues generated from the proposed project.

The Proposed Action would add to the short-term opportunities for employment in Beaver County, especially for workers associated with the support of the oil and gas industry. The

average cost to construct, drill and complete an individual well is approximately \$5,000,000, if four wells were drilled the economic impact would be approximately \$20,000,000.

If the proposed well is productive, long-term employment opportunities would likely be generated for at least one pumper and three tanker truck drivers. If the well is productive, income to the federal government, State of Utah and Beaver County would be generated in the form of royalties, sales taxes, income taxes, and property taxes for the producing well. Furthermore, if the well is productive, field development would likely be pursued by the applicant, thereby potentially resulting in additional short-term and long-term employment opportunities, royalties, sales taxes, income taxes, and property taxes.

If production is established from a well and/or additional wells, the development of oil and gas could lead to long-term impacts to the social structure of the communities, changes in the economic base, and an increased demand for local government services. These impacts could include increased revenues in the local economy, an increase in the tax base, change in the social structure of the local community, and increased demand for community services and strain on the infrastructure (schools, hospitals, law enforcement, fire protection, and other community needs). These possible social and economic changes are beyond the scope of this document and to make those projections would be speculative at best.

Negative socioeconomic impacts may also stem from oil and gas exploration and development activities. These impacts are difficult to quantify accurately due to complex interactions, feedback loops, changing and unknown parameters. Adverse social and economic consequences for areas adjacent to rapid oil and gas development might include, for example, higher costs of living and decreases in recreational tourism revenue. While such impacts may occur, accurate valuation is not currently possible in a predictive capacity and, given the scale of the Proposed Actions, negative impacts of even a moderate degree should not be anticipated.

4.3.2 Alternative B – No Action

This alternative (not to offer any of the nominated parcels for sale) may not meet the need for the Proposed Action.

4.3.2.1 Air Quality

The No Action alternative would prevent future potential impacts relating to lease operations on the proposed parcels. Although drilling and production activities on federal land surfaces are restricted to leased parcels, oil and gas exploration may also be authorized on unleased public lands, on a case-by-case basis, pursuant to 43 CFR 3150.0-1. Accordingly, this alternative would not prevent direct, indirect or cumulative environmental impacts relating to oil and gas exploration activities through denial of the proposed action. Additionally, this alternative would not prevent indirect impacts relating to rights of way authorizations to support oil and gas operations on adjacent leased parcels.

4.3.2.2 Socioeconomic Impacts

Under the No Action alternative, potential short-term beneficial impacts of increased employment and income and revenues generated from construction, drilling and completion of the wells on the proposed lease parcels would not be realized, nor would there be a demand for other oil and gas related services since wells would not be drilled. Not drilling the wells would reduce the likelihood of finding oil and gas resources. Local economies would not realize any added incomes from the proposed lease parcel lands. Similarly, the potential for minimal adverse socioeconomic impacts that could stem from oil and gas development of these four parcels would not occur under the No Action alternative.

4.4 Cumulative Impacts Analysis

A cumulative impact is defined in CEQ regulations (40 CFR §1508.7) as “the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.” Cumulative impacts can result from individually minor but collectively major actions taking place over a period of time. The *Supplemental EA for Oil and Gas Leasing in the Cedar City District* (BLM, 1988) developed an RFD scenario and analyzed the cumulative impacts of oil and gas leasing based on that scenario. That analysis is incorporated by reference herein.

Past and present actions and reasonably foreseeable future actions with the potential to contribute to cumulative effects are discussed below followed by an analysis of cumulative effects. A variety of activities, such as sightseeing, biking, camping, and hunting, have occurred and are likely to continue to occur within the nominated parcels; these activities likely result in negligible impacts to resources because of their dispersed nature. Other activities, such as livestock grazing, vegetation projects, and wildland fire, have also occurred within the nominated parcels and are likely to occur in the future. These types of activities are likely to have a greater impact on resources in the project area because of their more concentrated nature. Because these activities are occurring within the nominated parcel boundaries, they have the potential to contribute to cumulative effects. All resource values addressed in Chapter 3 have been evaluated for cumulative effects. If, through the implementation of mitigation measures or project design features, no net effect to a particular resource results from an action, then no cumulative effects result. Therefore, resources that were not carried forward for analysis, such as wetlands / riparian zones (see Section 1.8), are not considered in this analysis, since the Proposed Action alternative would not result in effects to those resources

4.4.1 Past and Present Actions

The Cumulative Impact Analysis Area (CIAA) for the resources analyzed in this EA is the BLM-managed lands and subsurface resources within the nominated parcel boundaries. Past and/or ongoing activities in the CIAA that could combine to produce cumulative impacts include oil and gas exploration and development, livestock grazing and rangeland improvements, recreational activities (particularly off-highway vehicle use), natural and prescribed fire, fire rehabilitation

efforts and other vegetation treatments, invasive species/noxious weed control, and increased private land development (e.g., subdivision construction activities).

Based on the past drilling history, it is estimated that exploratory wells would continue to be drilled in the district at the rate of about three wells per year for the foreseeable future. Drilling targets would continue to be primarily anticlinal structures in the eastern part of the district. Quantities are anticipated to be low; no oil and gas fields have been discovered in Beaver County and wildcat wells drilled in the past have not resulted in any usable discoveries. The current rate of drilling, extent of disturbance and magnitude of impacts are within the projection made in the Supplemental EA (BLM, 1998). In fact, the number of wells and the amount of surface disturbance that has occurred since completion of that analysis is less than predicted. Between 1988 and 2006, three oil and gas exploration wells were drilled on public lands in the Cedar City Field Office resulting in disturbance of about 12 acres, and no oil or gas production has resulted. Consequently impacts should be within the range of those described in the Supplemental EA.

Livestock grazing is currently a permitted use of public lands within the CIAA and although some minor changes may be expected over the next few years, it is reasonable to expect that livestock grazing would continue to occur on public lands. Grazing in the area could impact vegetation and soils near water sources and other areas where livestock congregate and could affect wildlife habitat.

Recreation within the CIAA is generally dispersed with more concentrated use occurring in other areas in the region outside of the Cedar City Field Office. Population growth in the area has increased the amount of recreation use occurring and at the same time has displaced some recreational users who enjoy dispersed activities to more remote areas. Use of the area by off-highway vehicle (OHV) recreationists has the potential to disturb soil and vegetation and affect wildlife habitat. OHV use that deviates from designated trails on a routine basis has the tendency to remove vegetation and cause rutting and localized compaction and erosion of soils.

Noxious weed treatments as well as other vegetation treatment projects may occur within the nominated parcels and result in short term ground disturbance.

Surface disturbance associated with oil and gas development could combine with vegetation removal and ground disturbance related to livestock grazing, OHV use, and vegetation treatment projects to result in cumulative effects. Impacts from these and other uses could be locally substantial but overall they affect a small portion of the lands within the CIAA. Soil disturbing activities from energy exploration and these other activities could reduce or remove the natural components that stabilize desert soils and increase soil loss through water and wind erosion.

Aeolian dust mobilized from wind erosion of arid-land soils generally contains high concentration of base cations, and the dust typically has high concentrations of nitrogen and phosphorous as well as elevated concentrations of a range of atmospheric pollutants (Neff et al., 2008). The increase in these inputs to ecosystems could have implications for surface-water alkalinity, aquatic productivity and terrestrial nutrient cycling (Neff et al., 2008). Best management practices would be implemented during ground disturbing activities to minimize the amount of dust generated.

There is also the potential for cumulative effects to wildlife and their habitat from these activities. Livestock grazing could reduce the amount of forage available for wildlife and could contribute to the proliferation of non-native weeds (such as cheat grass) that out-compete native

plants and provide inadequate nutrition for prairie dogs and other species. Domestic livestock grazing could also result in shrub encroachment (and subsequent loss of nutritious forbs and grasses) and alteration of fire ecology. Grazing activity in pygmy rabbit habitat could alter the composition, function and structure of habitats required by this species. Vegetation treatments that target the mature and old growth sagebrush required by the pygmy rabbit could lead to fragmentation of habitat for this species. Impacts to wildlife could also occur where OHV use denudes soil and creates gullies. OHV use could affect Utah prairie dogs through loss of habitat, proliferation of noxious weeds, and direct disturbance of individuals, resulting in interruption of above-ground foraging and other life-sustaining activities. Impacts to wildlife from the actions proposed in this analysis would be reduced by best management practices and measures implemented for their protection.

The CIAA for air quality is Beaver County. Based on the relatively minor levels of emissions associated with this proposed development, and the application of these BMP's, it is unlikely emissions from any subsequent development of the proposed leases would contribute to regional ozone formation in the project area, nor is it likely to contribute or cause exceedances of any NAAQS.

Based on the relatively minor levels of emissions associated with this proposed development, and the application of BMPs and lease notices, it is unlikely that emissions from any subsequent development of the proposed leases would contribute to regional ozone formation in the project area, nor is it likely to contribute or cause exceedances of any NAAQS. Emissions of GHGs are also anticipated to be relatively minor and result in no discernible impact on global or local climate patterns.

4.4.2 Reasonably Foreseeable Action Scenario (RFAS)

Many of the same actions and activities identified above as past and present actions would continue to affect the analysis area in the future and comprise the RFAS. Diffuse impacts from recreation use, livestock grazing, and other uses would continue into the future as described above. Some potential future land treatments in the CIAA could help to off-set the impacts from these uses. For example, noxious weed treatment would continue and would improve rangeland health.

Private lands in rural areas are being subdivided and sold for residential housing developments or commercial ventures as the area's population grows. Commercial and residential development is occurring on split-estate lands.

4.4.3 Cumulative Impact Analysis

Increased surface disturbance relating to future potential operational authorizations relating to the Proposed Action alternative (leasing four parcels with recommended protective measures) would impact air quality and socio-economics and increase the risk of noxious weed invasion and spread, which in turn could exacerbate the frequency and intensity of wildland fire. It is anticipated that the additional resource protection measures associated with the Proposed Action

would reduce the impacts to specific resources and areas within the CIAA. The minimal amount of disturbance associated with the expected level of development in the CIAA, in combination with Gold Book standard operating practices, best management practices, and additional measures that would minimize development impacts, would result in a negligible cumulative impact on the resources within the CIAA.

5.0 CONSULTATION AND COORDINATION

5.1 Introduction

Public and agency involvement has occurred as described in sections 5.2 and 5.3 below.

5.2 Persons, Groups, and Agencies Consulted

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
U.S. Fish & Wildlife Service	Section 7 ESA	A letter was sent to the USFWS on August 18, 2014 which provided the preliminary list and notified them of the May 2015 lease sale. Coordination with USFWS for the May 2015 lease sale is ongoing. Threatened and endangered species are not present on the subject parcels.
Utah State Historic Preservation Office	Section 106 NHPA	A consultation request letter was sent on December 16, 2014 with a determination of no adverse effect. A letter of concurrence was received from SHPO dated December 31, 2014.
State of Utah's Public Lands Policy Coordination Office	Coordinated with as leasing program partner.	A letter was sent on August 18, 2014 which provided the preliminary list and notified them of the May 2015 lease sale. A letter was received on November 3, 2014 primarily detailing specific concerns raised by the Utah Division of Wildlife Resources.
Utah Division of Wildlife Resources	Agency with expertise.	A letter was sent on August 18, 2014 which provided the preliminary list and notified them of the May 2015 lease sale. In addition, on August 8, 2014, GIS data depicting the May 2015 oil and gas lease sale preliminary parcels was sent to UDWR via electronic mail in order to further facilitate the reviews by that organization. Information was received in the letter from State of Utah's Public Lands Policy Coordination Office on November 3, 2014.
National Park Service, Salt Lake City Office	Coordinated with as leasing program partner.	A letter was sent on August 18, 2014 which provided the preliminary list and notified them of the May 2015 lease sale. In addition, on August 18, 2014, GIS data depicting the May 2015 oil and gas lease sale preliminary parcels was sent to the NPS via electronic mail in order to further facilitate the reviews by that agency. On September 2 and September 5, 2014, electronic mail was received from the NPS

		providing information regarding two parcels in proximity to or touching the Old Spanish National Historic Trail.
U.S. Forest Service, Intermountain Region	Coordinated with as leasing program partner.	A letter was sent on August 18, 2014 which provided the preliminary list and notified them of the May 2015 lease sale.
Utah School and Institutional Trust Lands Administration	Coordinated with as leasing program partner.	A letter was sent on August 18, 2018 which provided the preliminary list and notified them of the May 2015 lease sale.
Paiute Indian Tribe of Utah Ute Indian Tribe Hopi Tribe Navajo Nation Utah Navajo Commission Southern Ute Tribe Ute Mountain Ute Kaibab Paiute Tribe Moapa Band of Paiute Indians Zuni Tribe	American Indian Religious Freedom Act (1978) NHPA	Visits were made to the Navajo Nation, Paiute, and the Hopi Tribes in October 2014. Informational letters to all the tribes in the left-hand column were mailed on December 16, 2014.

5.3 Summary of Public Participation

In order to meet the intent of the CEQ regulations that require an “early and open process for determining the scope of issues to be addressed and for identifying significant issues related to a Proposed Action” (40 CFR 1501.7) several actions were taken to involve the public.

On November 4, 2014, the public was notified of the proposed action by posting on the Utah BLM ENBB (<https://www.blm.gov/ut/enbb>). The process used to involve the public also includes a 30-day public review and comment period for the EA and unsigned FONSI offered from December 19, 2014 to January 23, 2015.

All the information related to this EA is maintained on the identified websites (ENBB and Oil and Gas Leasing).

BLM utilized and coordinated the NEPA public participation requirements to assist the agency in satisfying the public involvement requirements under Section 106 of the National Historic Preservation Act (NHPA) (16 U.S.C. 470(f) pursuant to 36 CFR 800.2(d)(3). The information about historic and cultural resources within the area potentially affected by the proposed project/action/approval will assist the BLM in identifying and evaluating impacts to such resources in the context of both NEPA and Section 106 of the NHPA. BLM consulted with Indian tribes on a government-to-government basis in accordance with Executive Order 13175 and other policies. Tribal concerns, including impacts on Indian trust assets and potential impacts to cultural resources, were given due consideration. Federal, State, and local agencies, along with tribes and other stakeholders that may be interested in or affected by the proposed project/action/approval were invited to participate in the scoping process.

5.3.1 Comment Analysis

An internal review identified necessary corrections or clarifications to this EA. These modifications include:

1. Corrections to grammar, sentence structure, and formatting were made throughout the EA. In general, these changes were made without further clarification. Examples include: updates to the Table of Contents, changes in font size, changes in verb tense and style or insertion of footnotes.
2. Page 26 was changed from “In addition, control technology is not required by regulatory agencies at this point, since the majority of the parcels occur in NAAQS attainment areas.” to “In addition, control technology is not required by regulatory agencies at this point, since all of the parcels occur in NAAQS attainment areas.”
3. Appendix E – Response to Public Comments has been added.

5.3.2 List of Commenters

Hopi Tribe

State of Utah, Public Lands Policy Coordination Office (PLPCO)

WildEarth Guardians and Rocky Mountain Wild

5.3.3 Response to Public Comment

A 30-day public review and comment period for the EA and unsigned FONSI was offered from December 19, 2014 to January 23, 2015. BLM received three comment letters from individuals and organizations as follows: Hopi Tribe, State of Utah and one letter from WildEarth Guardians and Rocky Mountain Wild. The letter from WildEarth Guardians and Rocky Mountain Wild contained comments addressing two EA's, this EA and also for EA DOI-BLM-UT-C020-2015-0036-EA which proposes to lease ten parcels of BLM administered land in the May 2015 Oil and Gas Lease Sale on the Richfield Field Office. Comments from the WildEarth Guardians and Rocky Mountain Wild letter that are specific to the Cedar City EA are addressed in Appendix E, comments specific to the Richfield EA are addressed in that EA.

The BLM acknowledges the support and concerns expressed by the public regarding the leasing of oil and gas resources on the public lands within the Cedar City Field Office, including the subject lease parcels.

Information within the comments that is background or general in nature was reviewed; however, responses to or clarifications made to the EA from these items are not necessary. Likewise, expressions of position or opinion are acknowledged but do not cause a change in the analysis. As identified in the NEPA Handbook (H-1790-1, section 6.9.2.2 comment response),

BLM looked for modifications to the alternatives and the analysis as well as factual corrections while reviewing public comments.

5.4 List of Preparers

5.4.1 BLM

Name	Title	Responsible for the Following Section(s) of this Document
Joseph Manning	Geologist	Team Lead, Environmental Justice and Socio-Economics
Leonard Herr	Physical Scientist	Air Quality, and Greenhouse Gas Emissions/Climate Change
Dave Jacobson	Outdoor Recreation Planner	ACEC, Wilderness, WSA, National Historic Trails, Recreation, Visual Resources, Wild and Scenic Rivers
Jamie Palmer	Archaeologist	Cultural Resources, Native American Religious Concerns
Craig Egerton	Biologist	Farmlands, Floodplains, Hydrologic Conditions, Invasive Species, Noxious Weeds, Soils, Water Resources and Quality
Sheri Whitfield	Biologist	Fish and Wildlife, Migratory Birds, Special Status Wildlife
Vicki Tyler	Natural Resource Specialist	Fuels, Fire Management
Ed Ginouves	Geologist	Geology, Mineral Resources, Energy Production, Paleontology,
Brandon Johnson	Realty Specialist	Lands, Access
Dan Fletcher	Assistant Field Manager	Livestock grazing, Rangeland Health Standards and Guidelines, Vegetation
Adam Stephens	Range Specialist	Wetlands/Riparian Zones
Jeffery Reese	Range Specialist	Threatened, Endangered or Candidate Plant Species
Chad Hunter	Range Specialist	Wild Horse and Burros
Jack Sathe	Forester	Woodland, Forestry

5.4.2 Non-BLM Preparers

Name	Title	Responsible for the Following Section(s) of this Document
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6.0 REFERENCES, GLOSSARY AND ACRONYMS

6.1 References Cited

- Bureau of Land Management (BLM). (1976). Cedar City District Oil and Gas Leasing Environmental Analysis Record (EAR). Cedar City, Utah: Cedar City Field Office.
- BLM. (1986). Cedar Beaver Garfield Antimony Resource Management Plan. Cedar City, Utah: Cedar City District. October 1, 1986.
- BLM. (1988). Supplemental EA for Oil and Gas Leasing, Cedar City District (EA #UT-040-88-69). Cedar City, Utah: Cedar City Field Office.
- BLM. (2006). Conservation Measures from Land Use Plan-level Consultations for T&E Species of Utah. August 2006.
- BLM. (2008). Oil and Gas Leasing in the Eastern Portion of the Cedar City Field Office. Final Environmental Assessment UT-040-08-036. 107 pages.
- BLM. (2009). Amended Decision Record of Environmental Assessment UT-040-08-036, Oil and Gas Leasing in the Eastern Portion of the Cedar City Field Office. Cedar City, Utah: UT BLM Cedar City Field Office. September 8, 2009.
- Utah Division of Air Quality. (2011). Annual Report for the Year 2011, Salt Lake City, Utah, Page 38.

6.2 List of Acronyms

ACEC	Areas of Critical Environmental Concern
AQRV	Air Quality Related Values
APD	Application for Permit to Drill
BLM	Bureau of Land Management
BMP	Best Management Practice
BCR	Bird Conservation Region
CBGA	Cedar Garfield Beaver Antimony
CCFO	Cedar City Field Office
CFR	Code of Federal Regulations
CIAA	Cumulative Impact Analysis Area
DR	Decision Record
EA	Environmental Assessment
EIS	Environmental Impact Statement
ENBB	Environmental Notification Bulletin Board
EPA	Environmental Protection Agency
ESA	Endangered Species Act

FEIS	Final Environmental Impact Statement
FLAG	Federal Land Managers' Air Quality-Related Values Work Group
FLPMA	Federal Land Policy and Management Act of 1976
FONSI	Finding of No Significant Impact
FRMP	Final Resource Management Plan
GHG	Greenhouse Gas
IDPR	Interdisciplinary Parcel Review
IPCC	Intergovernmental Panel on Climate Change
IM	Instruction Memorandum
LN	Lease Notice
LUP	Land Use Plan
NAAQS	National Ambient Air Quality Standards
NCLS	Notice of Competitive Lease Sale
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
OSHA	Occupational Safety and Health Act
RFAS	Reasonably Foreseeable Action Scenario
RFD	Reasonably Foreseeable Development
RMP	Resource Management Plan
ROD	Record of Decision
ROW	Right-of-Way
SHPO	State Historic Preservation Office
UDWR	Utah Division of Wildlife Resources
USFWS	United States Fish & Wildlife Service
USC	United States Code
USO	Utah State Office
WO	Washington Office

APPENDICES

- A. Oil and Gas Lease Sale List with Stipulations and Lease Notices**
- B. Parcel Maps**
- C. Interdisciplinary Team Checklist**
- D. Deferred Parcel List**
- E. Response to Comments**

APPENDIX A

OIL AND GAS LEASE SALE LIST

In addition to the Stipulations listed below, the direction provided in Washington Office Memorandums WO-IM-2005-003 (Cultural Resources Stipulation) and WO-IM-2002-174 (Endangered Species Act Stipulation) should be applied to all parcels.

UT0515 - 012

T. 28 S., R. 7 W., Salt Lake
Sec. 30: Lots 2-4, E2, SENW, E2SW;
Sec. 31: Lots 1, 2, NWNE, NENW.

722.43 Acres
Beaver County, Utah
Cedar City Field Office

NOTICES

UT-LN-01: Crucial Winter Mule Deer and Elk Habitat
UT-LN-43: Raptors
UT-LN-44: Raptors
UT-LN-45: Migratory Bird
UT-LN-52: Noxious Weeds
UT-LN-55: Water and Watershed Protection
UT-LN-92: Notification & Consultation Regarding Cultural Resources
UT-LN-99: Regional Ozone Formation Controls
UT-LN-102: Air Quality Analysis

UT0515 - 013

T. 29 S., R. 7 W., Salt Lake
Sec. 6: Lots 6, 7, S2NE, E2SW, SE;
Sec. 7: All.

1,038.60 Acres
Beaver County, Utah
Cedar City Field Office

NOTICES

UT-LN-01: Crucial Winter Mule Deer and Elk Habitat
UT-LN-43: Raptors
UT-LN-44: Raptors
UT-LN-45: Migratory Bird
UT-LN-52: Noxious Weeds
UT-LN-55: Water and Watershed Protection

UT-LN-92: Notification & Consultation Regarding Cultural Resources
UT-LN-99: Regional Ozone Formation Controls
UT-LN-102: Air Quality Analysis

UT0515 – 019

T. 28 S., R. 8 W., Salt Lake
Sec. 25: W2NE, N2NW.

160.00 Acres
Beaver County, Utah
Cedar City Field Office

NOTICES

UT-LN-01: Crucial Winter Mule Deer and Elk Habitat
UT-LN-43: Raptors
UT-LN-44: Raptors
UT-LN-45: Migratory Bird
UT-LN-46: Pygmy Rabbit
UT-LN-49: Utah Sensitive Species
UT-LN-52: Noxious Weeds
UT-LN-55: Water and Watershed Protection
UT-LN-92: Notification & Consultation Regarding Cultural Resources
UT-LN-99: Regional Ozone Formation Controls
UT-LN-102: Air Quality Analysis

UT0515 – 020

T. 29 S., R. 8 W., Salt Lake
Sec. 11: SE;
Sec. 12: S2;
Sec. 13: N2, N2SW;
Sec. 14: NE, SENW, NESW, N2SE.

1,200.00 Acres
Beaver County, Utah
Cedar City Field Office

NOTICES

UT-LN-38: Ferruginous Hawk Nest Sites
UT-LN-42: Burrowing Owl Habitat
UT-LN-43: Raptors
UT-LN-44: Raptors
UT-LN-45: Migratory Bird
UT-LN-46: Pygmy Rabbit
UT-LN-49: Utah Sensitive Species

UT-LN-52: Noxious Weeds
 UT-LN-55: Water and Watershed Protection
 UT-LN-92: Notification & Consultation Regarding Cultural Resources
 UT-LN-99: Regional Ozone Formation Controls
 UT-LN-102: Air Quality Analysis

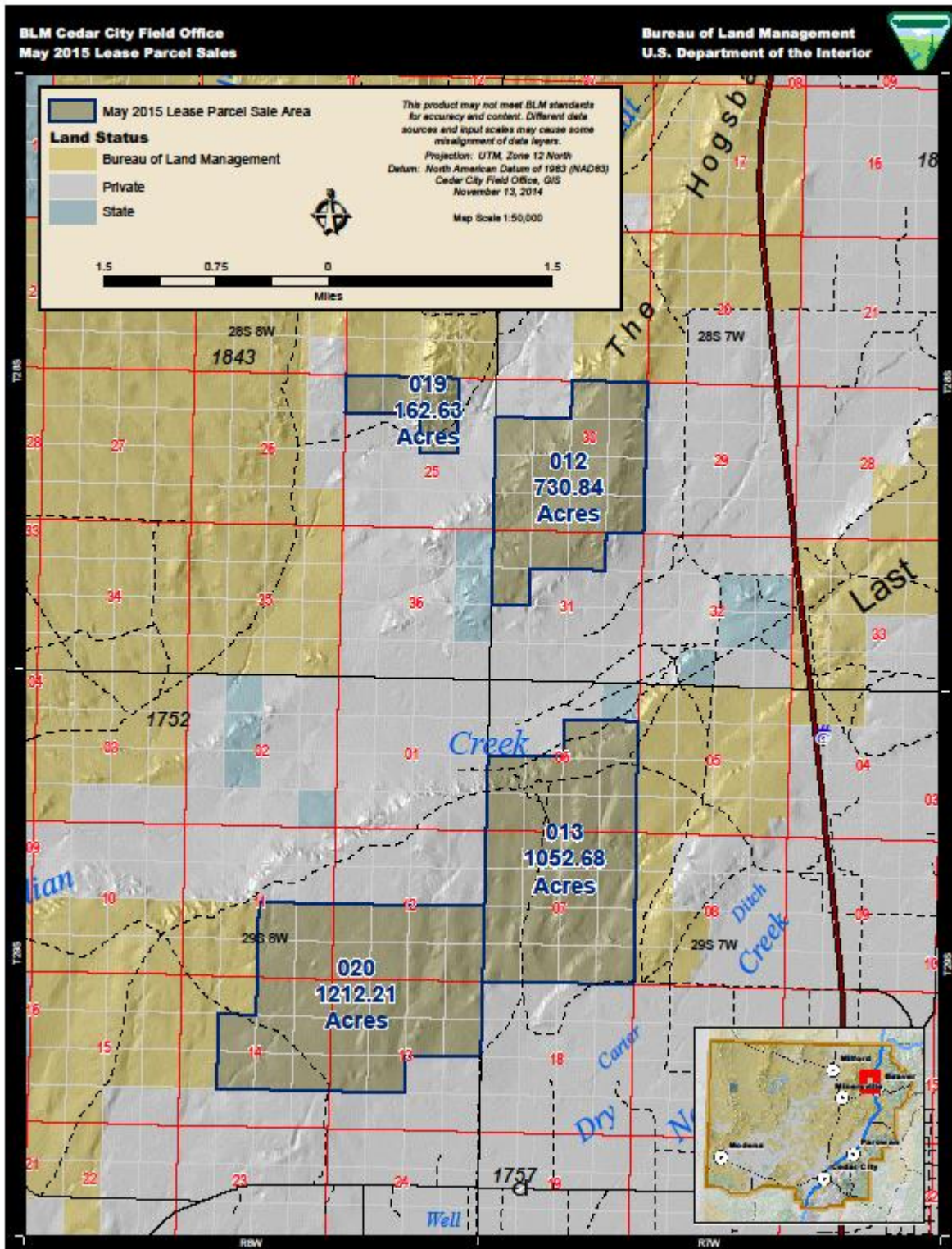
Number	UTAH LEASE NOTICES
UT-LN-01	<p>CRUCIAL WINTER MULE DEER AND ELK HABITAT</p> <p>The lessee/operator is given notice that this lease has been identified as containing crucial winter mule deer and elk habitat. No surface use or otherwise disruptive activity allowed from November 1 through May 15 within identified crucial winter mule deer and/or elk habitat. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2.</p>
UT-LN-38	<p>FERRUGINOUS HAWK NEST SITES</p> <p>The lessee/operator is given notice that this lease has been identified as containing ferruginous hawk nest sites. No surface use or otherwise disruptive activity allowed from March 1 through August 1 which would disrupt ferruginous hawk breeding activities within 0.5 mile of an occupied nest. No surface use or otherwise disruptive activity would be allowed which would result in an aboveground facility within 0.5 mile of known ferruginous hawk nests, which have been active within the past 3 years. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2.</p>
UT-LN-42	<p>BURROWING OWL HABITAT</p> <p>The lessee/operator is given notice that this lease has been identified as containing burrowing owl habitat. No surface use or otherwise disruptive activity allowed from March 1 through August 31 which would disrupt burrowing owl breeding activities within 0.25 mile of an occupied nest. No surface use or otherwise disruptive activity would be allowed which would result in an aboveground facility within 0.25 mile of known burrowing owl nests, which have been active within the past 3 years. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2.</p>
UT-LN-43	<p>RAPTORS</p> <p>The lessee/operator is given notice that this lease has been identified as containing raptor habitat. Surveys will be required whenever surface disturbances and/or occupancy is proposed in association with fluid mineral exploration and development within potential raptor nesting areas. Field surveys will be conducted as determined by the authorized officer of the Bureau of Land Management. Based on the result of the field survey, the authorized officer will determine appropriate buffers and timing limitations. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2.</p>

UT-LN-44	<p style="text-align: center;">RAPTORS</p> <p>Appropriate seasonal and spatial buffers shall be placed on all known raptor nests in accordance with Utah Field Office Guidelines for Raptor Protection from Human and Land use Disturbances (USFWS 2002) and Best Management Practices for Raptors and their Associated Habitats in Utah (BLM 2006). All construction related activities will not occur within these buffers if pre-construction monitoring indicates the nests are active, unless a site specific evaluation for active nests is completed prior to construction and if a BLM wildlife biologist, in consultation with USFWS and UDWR, recommends that activities may be permitted within the buffer. The BLM will coordinate with the USFWS and UDWR and have a recommendation within 3-5 days of notification. Any construction activities authorized within a protective (spatial and seasonal) buffer for raptors will require an on-site monitor. Any indication that activities are adversely affecting the raptor and/or its' young the on-site monitor will suspend activities and contact the BLM Authorized Officer immediately. Construction may occur within the buffers of inactive nests. Construction activities may commence once monitoring of the active nest site determines that fledglings have left the nest and are no longer dependent on the nest site. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2.</p>
UT-LN-45	<p style="text-align: center;">MIGRATORY BIRD</p> <p>The lessee/operator is given notice that surveys for nesting migratory birds may be required during migratory bird breeding season whenever surface disturbances and/or occupancy is proposed in association with fluid mineral exploration and development within priority habitats. Surveys should focus on identified priority bird species in Utah. Field surveys will be conducted as determined by the authorized officer of the Bureau of Land Management. Based on the result of the field survey, the authorized officer will determine appropriate buffers and timing limitations.</p>
UT-LN-46	<p style="text-align: center;">PYGMY RABBIT</p> <p>The lessee/operator is given notice that this lease has been identified as containing pygmy rabbit habitat. No surface use or otherwise disruptive activity allowed which would result in an aboveground facility or semi-permanent (e.g., roads, pipelines, reservoirs, etc.) within 300 feet of pygmy rabbit habitat. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2.</p>
UT-LN-49	<p style="text-align: center;">UTAH SENSITIVE SPECIES</p> <p>The lessee/operator is given notice that no surface use or otherwise disruptive activity would be allowed that would result in direct disturbance to populations or individual special status plant and animal species, including those listed on the BLM sensitive species list and the Utah sensitive species list. The lessee/operator is also given notice that lands in this parcel have been identified as containing potential habitat for species on the Utah Sensitive Species List. Modifications to the Surface Use Plan of Operations may be required in order to protect these resources from surface disturbing activities in accordance with Section 6 of the lease terms, Endangered Species Act, Migratory Bird Treaty Act and 43 CFR 3101.1-2.</p>
UT-LN-52	<p style="text-align: center;">NOXIOUS WEEDS</p> <p>The lessee/operator is given notice that lands in this lease have been identified as containing or are near areas containing noxious weeds. Best management practices to prevent or control noxious weeds may be required for operations on the lease.</p>

UT-LN-55	<p style="text-align: center;">WATER AND WATERSHED PROTECTION</p> <p>The lessee/operator is given notice that this lease may need modifications to the Surface Use Plan of Operations in order to prevent water pollution and protect municipal and non-municipal watershed areas. No surface use or otherwise disruptive activity allowed within 500 feet of live water or the reservoirs located in the Beaver, Milford and Sevier River drainages, Parowan and Cedar Valley drainages, or Pinto Creek/Newcastle Reservoir drainage in order to prevent water quality degradation in accordance with section 6 of the lease terms and 43CFR3101.1-2.</p>
UT-LN-92	<p style="text-align: center;">NOTIFICATION & CONSULTATION REGARDING CULTURAL RESOURCES</p> <p>The lease area may now or hereafter be found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), the Archaeological Resources Protections Act (ARPA), the Native American Graves Protection and Repatriation Act (NAGPRA), the American Indian Religious Freedom Act (AIRFA), other statutes and Executive Order 13007, and which may be of concern to Native American tribes, interested parties, and the State Historic Preservation Officer (SHPO). BLM will not approve any ground disturbing activities as part of future lease operations until it completes applicable requirements of the National Historic Preservation Act (NHPA), including the completion of any required procedure for notification and consultation with appropriate tribe(s) and/or the SHPO. BLM may require modifications to exploration and development proposals to further its conservation and management objectives on BLM-approved activities that are determine to affect or impact historic or cultural properties and/or resources.</p>
UT-LN-99	<p style="text-align: center;">REGIONAL OZONE FORMATION CONTROLS</p> <p>To mitigate any potential impact oil and gas development emissions may have on regional ozone formation, the following Best Management Practices (BMPs) would be required for any development projects:</p> <ul style="list-style-type: none"> • Tier II or better drilling rig engines • Stationary internal combustion engine standard of 2g NOx/bhp-hr for engines <300HP and 1g NOx/bhp-hr for engines >300HP • Low bleed or no bleed pneumatic pump valves • Dehydrator VOC emission controls to +95% efficiency • Tank VOC emission controls to +95% efficiency
UT-LN-102	<p style="text-align: center;">AIR QUALITY ANALYSIS</p> <p>The lessee/operator is given notice that prior to project-specific approval, additional air quality analyses may be required to comply with the National Environmental Policy Act, Federal Land Policy Management Act, and/or other applicable laws and regulations. Analyses may include dispersion modeling and/or photochemical modeling for deposition and visibility impacts analysis, control equipment determinations, and/or emission inventory development. These analyses may result in the imposition of additional project-specific air quality control measures.</p>

APPENDIX B

PARCEL MAP



APPENDIX C

INTERDISCIPLINARY TEAM CHECKLIST

DETERMINATION OF STAFF

NP = not present in the area impacted by the proposed or alternative actions

NI = present, but not affected to a degree that detailed analysis is required

PI = present with potential for relevant impact that need to be analyzed in detail in the EA

NC = (DNAs only) actions and impacts not changed from those disclosed in the existing NEPA documents cited in Section D of the DNA form. The Rationale column may include NI and NP discussions.

Determination	Resource	Rationale for Determination*	Signature	Date
RESOURCES AND ISSUES CONSIDERED (Includes Supplemental Authorities Appendix 1 H-1790-1)				
PI	Air Quality	Emissions from earth-moving equipment, vehicle traffic, drilling and completion activities, separators, oil storage tanks, dehydration units, and daily tailpipe and fugitive dust emissions could adversely affect air quality. Attach lease notices UT-LN-99 and UT-LN-102 to every parcel	L. Herr	11-06-2014
NP	Areas of Critical Environmental Concern	The CCFO does not have any designated ACECs	Dave Jacobson	10-15-2014
NP	BLM Natural Areas/Lands with Wilderness Characteristics	None of the lease parcels are within Natural Areas or areas identified as having lands with wilderness characteristics in the 2011 and updated 2014 wilderness characteristics inventory. Parcel 21 touches wilderness characteristics inventory unit UT-C010-025E which does not have WC. All other lease parcels are not in areas that meet the size criteria for wilderness characteristics inventory are not inventoried.	Dave Jacobson	10-15-2014
NI	Cultural Resources	On October 21, 2014, a cultural resource records review and cultural resource analysis was completed for the proposed lease sale. The proposed lease sale is located in terrain with low-to-medium cultural resource site density . This is based on a cultural resource site density map of recorded cultural resources for the Cedar City Field Office. This map uses cultural resource data from the SHPO CURES database generated on October 7, 2014. A complete inventory of the proposed lease parcels has not occurred and therefor the following lease notice (UT-LN-92) will be added to each lease parcel: <i>“The lease area may now or hereafter be found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), the Archaeological Resources Protections Act (ARPA), the Native American Graves Protection and Repatriation Act (NAGPRA), the American Indian Religious Freedom Act (AIRFA), other statues and Executive Order 13007, and which may be of concern to Native American tribes, interested parties, and the State Historic Preservation Officer (SHPO). BLM will not approve any ground disturbing activities as part of future lease operations until it completes applicable requirements of the National Historic</i>	Jamie Palmer	11/3/2014

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Determination	Resource	Rationale for Determination*	Signature	Date
		<p><i>Preservation Act (NHPA), including the completion of any required procedure for notification and consultation with appropriate tribe(s) and/or the SHPO. BLM may require modifications to exploration and development proposals to further its conservation and management objectives on BLM-approved activities that are determine to affect or impact historic or cultural properties and/or resources."</i></p> <p>In addition, WO-IM-2005-003 stipulation on cultural resources will be added to all parcels. This stipulation provides the following: <i>"This lease may be found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, or other statutes and executive orders. The BLM will not approve any ground disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated."</i></p> <p>BLM also consulted with the Central Utah Archaeological Society on September 11, 2014 and September 22, 2014.</p> <p>If oil and gas development results from any lease, site specific Class III cultural resource inventories will be conducted. The BLM will also complete an additional EA and conduct additional consultation with Native American tribes and the State Historic Preservation Officer in association with any permits to drill.</p> <p>Site density and distribution are such that a 12-acre well pad and ancillary facilities can be accommodated without adversely affecting known historic properties. Due to the expected site type, site density, and historic property distribution it has been determined that reasonable development could occur on these parcels without adverse effect to historic properties. Therefore it is the CCFO's determination that this undertaking is a "No Adverse Effect" situation. SHPO consultation is on-going.</p>		
NI	Greenhouse Gas Emissions	<p>It is currently not feasible to know with certainty the net impacts from leasing and any potential exploration on climate. While BLM actions may contribute to the climate change phenomenon, the specific effects of those actions on global climate are speculative given the current state of the science. Leasing the subject parcels would have no direct impacts on climate as a result of GHG emissions. There is an assumption; however that leasing the parcels would lead to some type of exploration that would have indirect effects on global climate through GHG emissions. However, those effects on global climate change cannot be determined. It is unknown whether the petroleum resources specific to these parcels are gas or oil or a combination thereof. Since these</p>	L. Herr	11-06-2014

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Determi- nation	Resource	Rationale for Determination*	Signature	Date
		types of data as well as other data are unavailable at this time, it is also unreasonable to quantify GHG emission levels.		
NI	Environmental Justice	As defined in EO 12898, minority, low income populations and disadvantaged groups may be present within the counties involved in this lease sale. The stipulations and notices applied to the subject parcels do not place an undue burden on these groups. Leasing would not adversely or disproportionately affect minority, low income or disadvantaged groups.	/s/J. Manning	10/15/14
NI	Farmlands (Prime or Unique)	There are likely soils within the analysis area capable of being developed into important, prime or unique farmlands, but this capability is based upon irrigation water being provided. There is only one small area within the analysis area known to have irrigation water provided and that is a small area of BLM lands in parcel 21 south of State Road 21, which is believed to be farmed without authorization. However, parcel 21 has been deferred in its entirety from offering at the May 2015 oil and gas lease sale. The general lack of irrigation water on all parcels eliminates all parcels from being important, prime or unique farmlands. In the event any authorized important, prime or unique farmlands are found during the analysis process, those parcels should include a notice that surface occupancy would not be allowed on the agricultural areas.	C. Egerton	09/15/14
NI	Fish and Wildlife Excluding USFWS Designated Species	Parcels 12, 13 & 19 are identified as UDWR mapped mule deer crucial winter habitat. Attach Lease Notice UT-LN -01. In light of existing knowledge and data regarding wildlife for the subject parcels, the verification of this data and knowledge during parcel site-visits, and the protective measure that would be applied to the parcels if leased, significant impacts are not anticipated to occur as a result of leasing the proposed parcels.	S. Whitfield	09/10/14
NI	Floodplains	Published Beaver County floodplain data could not be located. Based on local knowledge of the area, all or parts of Cunningham Wash and Wildcat, Indian and North Creeks are all considered to be 100 year floodplains. All of these floodplains have the potential to contribute water to the Minersville Reservoir, which is on the State of Utah's 303(d) list of impaired waters. Though not affecting the majority of these individual parcels, parcels numbered 12, 13 and 19 are thought to contain at least a portion of these floodplains, and therefore Lease Notice LN-55 should be applied to parcels 12, 13, and 19. The balance of the parcels do not contain substantial floodplains. In light of existing knowledge and data regarding floodplains for the subject parcels and the protective measure that would be applied to the parcels if development is proposed, leasing the parcels, as provided in the Proposed Action, is not anticipated to significantly impact floodplains.	C. Egerton	09/15/14

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Determi- nation	Resource	Rationale for Determination*	Signature	Date
NI	Fuels/Fire Management	Lease of these parcels will not impact fuels/fire management within the Color Country Resource Area. There is the potential with these leased parcels that ground disturbing operations may occur in the future. Any activity that involves surface disturbance or direct resource impacts will have to be authorized as a lease operation through future NEPA analysis, on a case-by-case basis. Conditions of approval on an APD requiring revegetation, should mineral lease operations occur on these parcels, would need to be considered at that time.	V. Tyler	10/17/14
NI	Geology / Mineral Resources/Energy Production	<p>The parcels have no <i>known</i> fluid or solid minerals potential other than surficial deposits of sand and gravel in Quaternary alluvium. The only minerals authorizations or developments within the parcel areas are U-83088 and U-90426, both free use permits to Beaver County for sand and gravel, which fall on parcel 021. However, parcel 021 has been deferred for offering at the May 2015 oil and gas lease sale. There are no mining claims located on any of the parcels.</p> <p>All of the parcels occupy areas currently classified as prospectively valuable for oil and gas. The parcels all fall within the Beaver Basin (a late Cenozoic structural basin) which USGS considers high potential for the occurrence of basin fill deposits of uranium sourced from surrounding uranium-bearing volcanic source rocks. Some exploratory holes were drilled in the basin in the late 1970's or early 1980's but the data was never made public.</p> <p>Any conflicts between fluid mineral operations and other mineral operations would be resolved at the time of any application related to fluid mineral exploration and development.</p>	E. Ginouves	9/3/14
NI	Hydrologic Conditions	<p>All parcels are included in the upper watershed of the Minersville Reservoir, which is on the state 303(d) list of impaired waters. Attach lease notice UT-LN – 55 to all lease parcels.</p> <p>In light of existing knowledge and data regarding hydrologic conditions for the subject parcels and the protective measure that would be applied to the parcels if future development is proposed, leasing the parcels, as provided in the Proposed Action, is not anticipated to have significant impacts to water resources.</p>	C. Egerton	09/15/14
NI	Invasive Species/Noxious Weeds (EO 13112)	Noxious weeds are known to occur on parcels 12, 13, 19 and are expected to occur on parcel 20. The NI determination here is supported by BLM's ability to mitigate or avoid surface disturbances in noxious weed areas through the standard lease terms and the use of COAs and BMP if development operations are proposed on the parcels. Apply Lease Notice LN – 52 to all parcels.	C. Egerton	09/15/14
NI	Lands/Access	<p>The governing land use plan (as amended) allows for oil and gas development with associated infrastructure. Oil and gas leasing is not expected to affect access to public lands. Leasing would be subject to all valid pre-existing rights.</p> <p>The Cameron-Milford 138kV Transmission Line is scheduled</p>	B. Johnson	9/4/14

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Determi- nation	Resource	Rationale for Determination*	Signature	Date
		<p>for construction through parcel 20 over the next 1-2 years. However, leasing the parcels should have no impact on this valid existing right, and should the leased parcels go into production the two projects could be coordinated.</p> <p>Any proposals for future projects within the oil and gas lease area would be reviewed on a site-specific basis and other right-of-way (ROW)/lease holders in the area would be notified, as per regulations, when an application for right-of-way is received by this office.</p> <p>Off-lease ancillary facilities that cross public land, if any, may require separate authorizations. Coordination with existing ROW holders and application of SOPs, BMPs and design features at the APD stage, would ensure protection of existing rights.</p> <p>The records have been reviewed. There are no withdrawals, right-of-way avoidance or, right-of-way exclusion areas within the oil and gas lease area.</p>		
NI	Livestock Grazing/Range	<p>The following allotments are located in the parcels identified in the 2015 Oil and Gas Lease sale: Parcels 013and 020 - Mineral Range Allotment. Livestock grazing occurs within the grazing allotment identified above.</p> <p>Lease of the parcels will not impact livestock grazing within the identified grazing allotments. However, there is an inherent expectation to conduct operations on each leased parcel. Any activity that involves surface disturbance or direct resource impacts will have to be authorized as a lease operation through future NEPA analysis, on a case-by-case basis. Impacts to livestock grazing may occur as a result of subsequent actions including exploration development, production, etc.... Therefore, reclamation procedures including re-vegetation (utilizing appropriate seed mix based on ecological site, elevation and topography), road reclamation, Range Improvement Project replacement/restoration (fences, cattle guards, etc...), noxious weed stipulations, etc... would be identified in future NEPA/Decision documents on a case-by-case basis. In addition, if any range improvement projects will be impacted by wells or associated infrastructure, wells will be moved 200 meters to avoid these impacts (Code of Federal Regulations (CFR), 43 CFR 3101.1-2). The issues identified above would be addressed further on a project site specific level if an Application for Permit to Drill (APD) is filed.</p>	D. Fletcher	09/11/14
NI	Migratory Birds	<p>All the parcels would provide nesting and foraging areas for a variety of migratory birds. Development of the parcels would impact migratory birds if this occurred during the bird nesting season (March 1 – August 31). Attach lease notices UT-LN-45 (Migratory Birds), UT-LN-43 (Raptors) and UT-LN-44 (Raptors) to all parcels.</p> <p>In light of existing knowledge and data regarding migratory birds for the subject parcels and the protective measure that would be applied to the parcels if future development is</p>	S. Whitfield	09/10/14

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Determi- nation	Resource	Rationale for Determination*	Signature	Date
		proposed, leasing the parcels, as provided in the Proposed Action, is not anticipated to have significant impacts to migratory birds.		
NP	National Historic Trails	There are not any Nationally Designated Historic Trails within or near any of the lease parcels.	Dave Jacobson	10-15-2014
NI	Native American Religious Concerns	BLM has sent letters containing notification of this lease sale and the results of our cultural resources records search to the following Tribes: Paiute Indian Tribe of Utah, Ute Indian Tribe, Hopi Tribe, Navajo Nation, Utah Navajo Commission, Southern Ute Tribe, Ute Mountain Ute, White Mesa Ute, Kaibab Paiute Tribe, and Zuni Pueblo. In addition BLM met with the Paiute Indian Tribe of Utah (PITU) on 10/21/2014 and the Navajo Nation on 10/23/2014. The PITU and Navajo Nation did not identify any cultural and religious concerns with the Cedar City Field Office parcels. Consultation with the Hopi Tribe is ongoing. Correspondence is summarized in the Chapter 5 consultation table. This correspondence is part of the record. Additional consultation would be initiated at the APD stage.	Jamie Palmer	11/18/2014
NI	Paleontology	No documented occurrences of valuable paleontological resources occur within the nominated parcels. The surficial geology of the parcels is Quaternary alluvium, principally derived from igneous rocks. Using the Bureau's Potential Fossil Yield Classification System, the alluvium would be Class 2, Low Potential for scientifically significant invertebrate or vertebrate fossil resources. Any future analysis required for an authorization to conduct exploratory or operational activities would include a review of findings to date, and would incorporate appropriate mitigation measures to protect valuable paleontological resources.	E. Ginouves	9/3/14
NI	Rangeland Health Standards & Guidelines	Refer to livestock grazing section. Lease of the parcels will not impact Rangeland Health Standards within the identified allotments. However, there is an inherent expectation to conduct operations on each leased parcel. Any activity that involves surface disturbance or direct resource impacts will have to be authorized as a lease operation through future NEPA analysis, on a case-by-case basis. It would be expected that reclamation procedures identified in the livestock grazing section would be required to ensure impacts to Rangeland Health Standards are minimized.	D. Fletcher	09/11/14
NI	Recreation	Dispersed recreation in the identified parcels may be temporarily displaced which mostly consist of use of OHVs/ATVs and hunting for large and small game. There are no Special Recreation Management Areas (SRMA) within the lease parcels.	Dave Jacobson	10-15-2014
PI	Socio-Economics	Drilling and exploration wells could impact the local social structure and economy. For the short-term, land surveyors,	J. Manning	10/15/14

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Determination	Resource	Rationale for Determination*	Signature	Date
		<p>landsmen, construction crews, and drilling crews would be involved during the drilling phase. Construction could take 10 to 20 days and drilling operations are expected to take about 20 to 60 days. This activity would lead to work crews lodging in local facilities with subsequent expenditures in local markets. If the well is producible in paying quantities, the local social structure and economy could experience long-term impacts. These impacts could result in beneficial economic development, a need for additional infrastructure to provide goods and services to work forces, and possible changes to the economic and social base of the local community. Production could lead to additional exploration and development, increased oil and gas activities, additional employment, and royalties. Long term impacts could be in the range of 10-40 years.</p> <p>Negative socioeconomic impacts may also stem from oil and gas exploration and development activities. These impacts are difficult to quantify accurately due to complex interactions, feedback loops, changing and unknown parameters. Adverse social and economic consequences for areas adjacent to rapid oil and gas development might include, for example, higher costs of living and decreases in recreational tourism revenue. While such impacts may occur, accurate valuation is not currently possible in a predictive capacity and, given the scale of the Proposed Actions, negative impacts of even a moderate degree should not be anticipated.</p>		
NI	Soils	See also hydrology. All parcels -- Slopes are relatively flat and not particularly sensitive to erosion due to ground disturbing activities. Reclamation potential is expected to be moderate to high on all parcels based on reclamation and large scale vegetation treatment projects which have occurred since the 1960's.	C. Egerton	09/15/14
NP	Threatened, Endangered or Candidate Plant Species	No known Sensitive Plant Species are present in or adjacent to the project area.	J. Reese	11/17/14
NI	Special Status Species (includes threatened, endangered, candidate and BLM sensitive).	<p>UDWR mapped Greater sage-grouse brood-rearing habitat exists on all of parcels 14, 21, 22, 23, 24, 25 and portions of parcels 19, 20. All portions of the aforementioned parcels and portions of parcels within greater sage-grouse habitat have been deferred from offering at the May 2015 oil and gas lease sale.</p> <p>Parcel 20 has burrowing owl burrows. Attach lease notice UT-LN-42</p> <p>Ferruginous hawk nest are located on parcel 20. Attach lease notice UT-LN-38</p> <p>Kit fox- potential habitat occurs on parcel 20. Attach lease notice UT-LN-49</p> <p>Long-billed curlew potential habitat occurs on parcel 19. Attach lease notice UT-LN-49</p>	S. Whitfield	09/10/14

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Determination	Resource	Rationale for Determination*	Signature	Date
		<p>Pygmy rabbit potential habitat occurs on parcels 19 and 20. Attach lease notice UT-LN-46</p> <p>In light of existing knowledge and data regarding special status species for the remaining parcels (areas not deferred from the May 2015 oil and gas lease sale) and the protective measure that would be applied to the parcels if future development is proposed, leasing the parcels, as provided in the Proposed Action, is not anticipated to have significant impacts to special status species.</p>		
NI	Vegetation	<p>Refer to livestock grazing and Rangeland Health Standards sections.</p> <p>Lease of the parcels may impact vegetation within the identified allotments if an APD is granted. Any activity that involves surface disturbance or direct resource impacts will have to be authorized as a lease operation through future NEPA analysis, on a case-by-case basis. It would be expected that reclamation procedures identified in the livestock grazing and Rangeland Health sections would be required to ensure impacts to vegetation are minimized and disturbed areas are reclaimed.</p>	D. Fletcher	09/11/14
NI	Visual Resources	All the parcels within the CCFO are within VRM class IV and will meet the objectives of that class. The majority of the lease parcels are within VRI class III with a very small portion within VRI class II which is associated with the I-15 corridor. If the parcels are developed, mitigation measures will be implemented to reduce any visual impacts created from structures and development of drill pads.	Dave Jacobson	10-15-2014
NI	Wastes (hazardous or solid)	There are currently no known waste issues associated with the proposed lease areas. If development of roads or well pads occur, potential release from equipment could be possible. State and Federal regulations would govern the use, storage and disposal of any products that could potentially impact persons or environment. Reporting and mitigation efforts would be required should such an event occur.	/s/ J. Manning	10/15/14
NI	Water Resources/Quality (drinking/surface/ground)	See also floodplains and hydrology. As previously stated, all of the parcels are within the watershed of the Minersville Reservoir, a 303(d) state listed impaired water. Lease notice UT-LN-55 should be applied to all lease parcels from a hydrologic and water quality standpoint. Provisions are in place in the Proposed Action such that should adequately protect the groundwater aquifer from contamination and to keep any produced water contained and protected on the specific parcel site.	C. Egerton	09/15/14
NP	Wetlands/Riparian Zones	Wetlands/Riparian zones are not present within the parcels associated with the May 2015 oil and gas lease sale.	A. Stephens	11/17/2014
NP	Wild and Scenic Rivers	There are no eligible river segments with the proposed lease areas.	Dave Jacobson	10-15-2014
NP	Wilderness/WSA	The lease parcels are not within or near wilderness or WSA's.	Dave Jacobson	10-15-2014

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Determination	Resource	Rationale for Determination*	Signature	Date
NP	Wild Horses and Burros	These parcels are not within or adjacent to any wild horse Herd Areas(HA) or Herd Management Areas (HMA).	C. Hunter	10/15/14
NI	Woodland / Forestry	Woodland resources are present within parcels 12, 19 and 20. Considering the size and scope of the project, no impact to woodland resources is anticipated within the three parcels.	J. Sathe	9/24/14
NP	Non-Wilderness Study Area Lands with Wilderness Characteristics	The lease parcels are not within or near wilderness or WSA's	Dave Jacobson	10-15-2014

FINAL REVIEW:

Reviewer Title	Signature	Date	Comments
Environmental Coordinator	/s/Gina Ginouves	2/13/2015	
Authorized Officer	/s/Dave Jacobson	2/13/2015	Acting for Elizabeth Burghard (FOM)

APPENDIX D

DEFERRED PARCEL LIST

Date Nominated	Parcel Number	Legal Description	Acres	Reason Tract Postponed	Land Use Plan
July 1, 2014	UT0515-014-CCFO, Beaver County	T. 30 S., R. 7 W., Salt Lake Sec. 6: Lots 4-7.	159.20	Sage grouse	CBGA, 1986
July 1, 2014	UT0515-019- partial CCFO, Beaver County	T. 28 S., R. 8 W., Salt Lake Sec. 26: W2, W2E2, SESE; Sec. 35: All.	1,160.00	Sage grouse	CBGA, 1986
July 1, 2014	UT0515-020- partial CCFO, Beaver County	T. 29 S., R. 8 W., Salt Lake Sec. 11: SW; Sec. 14: N2NW, SWNW, NWSW	320.00	Sage grouse	CBGA, 1986
July 1, 2014	UT0515-021-CCFO, Beaver County	T. 29 S., R. 8 W., Salt Lake Sec. 9: E2SW, SE; Sec. 10: S2; Sec. 15: N2, SW, N2SE; Sec. 20: NENE, S2NE, N2SE, E2SWSE, SESE; Sec. 21: N2, SW, NWSE; Sec. 22: NW, E2SW, SWSE; Sec. 27: NENW; Sec. 28: NW;	2,478.75	Sage grouse	CBGA, 1986

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		Sec. 29: NENE, E2NWNE, N2SENE, N2SWSENE, N2SWSWSENE, SESWSENE, SESENE.			
July 1, 2014	UT0515-022 CCFO, Beaver County	T. 29 S., R. 8 W., Salt Lake Sec. 33: S2SW, SE; Sec. 34: SW, S2SE.	480.00	Sage grouse	CBGA, 1986
July 1, 2014	UT0515-023 CCFO, Beaver County	T. 30 S., R. 8 W., Salt Lake Sec. 1: All.	681.16	Sage grouse	CBGA, 1986
July 1, 2014	UT0515-024 CCFO, Beaver County	T. 30 S., R. 8 W., Salt Lake Secs. 3, 4 and 5: All.	2,057.72	Sage grouse	CBGA, 1986
July 1, 2014	UT0515-025 CCFO, Beaver County	T. 30 S., R. 8 W., Salt Lake Secs. 6, 7 and 8: All.	2,055.09	Sage grouse	CBGA, 1986

APPENDIX E

RESPONSE TO COMMENTS

Copies of comment letters are available through the Cedar City Field Office for review.

Comment 1 - Hopi Tribe: “[...P]lease provide us with copies of the Class I records search and draft environmental assessment for review and comment.”

BLM Response to Comment 1: *Copies of the Class I records search and Draft EA were mailed to the Hopi Tribe on 1/26/2015.*

Comment 2 – WildEarth Guardians: “Parcels UT0514[sic]5-002, 003, 005, 007, 012, 013, 019, 020, and 030 are identified by 2012 Utah Division of Wildlife Resources data as overlapping with lands having [the] presence of greater sage grouse...[P]lease explain why Parcels [UT05115-] 002, 003, 005, 007, 012, 013, and 030 do not appear to be slated for any kind of deferral due to sage grouse habitat, and the EA does not evaluate impacts to sage grouse on these parcels despite the Utah Division of Wildlife Resources (UDWR) records that indicate that sage grouse have been recorded using these parcels.”

BLM Response to Comment 2: *Neither BLM nor UDWR have identified greater sage-grouse or habitat for greater sage-grouse within any of the parcels proposed for the May 2015 oil and gas lease, as depicted in Appendix A of this EA and the Richfield Field Office EA, which includes the following parcels: Cedar City Field Office parcels: UT0515- 012 and 013 (Richfield Field Office parcels: UT0515-002, 003, 005, 007, and 030). The parcels proposed for lease at the May 2015 oil and gas lease sale, as depicted in Appendix A of this EA, have not been slated for deferral from the May 2015 lease sale on account of greater sage-grouse because it has been determined that greater sage-grouse habitat is not present within any portion of those parcels. Potential impacts to greater sage-grouse have been evaluated as part of the lease parcel review process for the May 2015 oil and gas lease sale and, as a result of this review, all lands within the preliminarily proposed parcels for the May 2015 lease sale where habitat for greater sage-grouse was identified has been deferred from the May 2015 lease sale in accordance with BLM WO IM No. 2012-043. The lands that were preliminarily proposed and considered, but ultimately deferred from the May 2015 oil and gas lease sale are addressed in this EA at Appendix D. Utah National Heritage Plan data does not indicate any sightings in the portions of parcel 013 proposed for this lease sale. In addition, BLM conducted on-site visits to the parcels proposed for the May 2015 oil and gas lease sale in order to verify existing knowledge and data regarding non-mineral resources on the parcels.*

Comment 3 – WildEarth Guardians: “We request that all parcels listed above be deferred from the lease sale pending analysis of whether large-block unleased parcels inside Core [sage grouse] Areas are being leased, pursuant to IM 2012-043.”

BLM Response to Comment 3: *As described in BLM WO IM No. 2012-043, greater sage-grouse “Core Areas” is a habitat designation that was established with an Executive Order from the Governor of the State of Wyoming and that habitat designation is applicable only to the State of Wyoming. As the “Core Areas” referenced in BLM WO IM No. 2012-043 is only applicable to Wyoming, it is not a greater sage-grouse habitat category that is recognized by BLM Utah. With respect to lands within Utah, BLM WO IM No. 2012-043 established two categories of greater sage-grouse habitat, Preliminary Priority Habitat (PPH) and Preliminary General Habitat (PGH) that are applicable. Moreover, in Utah, PGH and PPH are both encompassed by “occupied habitat” for greater sage-grouse, as identified by UDWR. In accordance with BLM WO IM No. 2012-043, all lands within the preliminarily proposed parcels for the May 2015 oil and gas lease sale that overlapped with “occupied habitat” (i.e. PPH and PGH) for greater sage-grouse has been deferred from the May 2015 lease sale. These deferred lands included the “Bald Hills” greater sage-grouse PPH areas. As discussed above, it has been determined that habitat for greater sage-grouse is not present within any of the parcels proposed for the May 2015 oil and gas lease sale.*

Comment 4 – WildEarth Guardians: “Given the pendency of the Utah Greater Sage-Grouse RMP Amendment EIS, and the perilous status of the sage grouse with regard to Endangered Species [Act] listing, these lands should all be deferred from leasing pending an outcome of the RMP Amendments.”

BLM Response to Comment 4: *In 2013, a Notice of Availability was published in the Federal Register for the Utah Greater Sage-Grouse Draft Land Use Plan Amendments and Environmental Impact Statement (Draft Utah Sage-Grouse LUPA/EIS). The Draft Utah Sage-Grouse LUPA/EIS identified two categories of greater sage-grouse habitat where protections for greater sage-grouse may be applied. Specifically, the Draft Utah Sage-Grouse LUPA/EIS identified the following categories of greater sage-grouse habitat: “Preliminary Priority Management Areas (PPMA)” and “Preliminary General Management Areas (PGMA).” The parcels identified in Appendix A of this EA, which are proposed for the May 2015 lease sale, do not overlap with any lands identified as PPMA or PGMA.*

All other aspects of WildEarth Guardian’s comment related to greater sage-grouse have been considered and determined to lack merit for the reasons that have been discussed in the BLM responses above.

Comment 5 – WildEarth Guardians: “The high costs to society from the leasing and possible subsequent burning of public lands fossil fuels must be properly analyzed and presented to the public and agency decision makers.”

BLM Response to Comment 5: *At the present time, there is a substantial amount of professional disagreement and uncertainty as to what impacts greenhouse gas (GHG) emissions have on climate and, as a result, it is not possible to determine what social costs, if any, could be caused by emissions of GHGs. The latest IPCC report (IPCC WG1AR5, 2014) states the equilibrium climate sensitivity is likely in the range of 1.5°C to 4.5°C (high confidence), extremely unlikely*

less than 1°C (high confidence), and very unlikely greater than 6°C (medium confidence). No best estimate for equilibrium climate sensitivity can now be given because of a lack of agreement on values across assessed lines of evidence and studies. Given that this range represents potential impacts from minor to major it would be purely speculative, at best, to try to determine what, if any, social costs might result from impacts across this range. Until further refinements in analytical techniques are verified through observational data, it is not possible to estimate impacts. Even if it were assumed, arguendo, that the impacts of GHG emissions could be evaluated with any degree of certainty, it still would not be possible to formulate an estimate, that would be anything but pure speculation, as to the potential social costs of GHG emissions that may result from the May 2015 oil and gas lease sale because any attempt to estimate the potential GHG emissions that might result from the May 2015 oil and gas lease sale would also be pure speculation on account of the complete uncertainty at the present time with respect whether, where and the procedures that might utilized in oil or gas development operations that may occur in the future as a result of issuing leases for the proposed May 2015 lease sale parcels.

Comment 6 – WildEarth Guardians: “Before the social cost of carbon can be analyzed, the agency must provide an estimate of carbon emissions.”

BLM Response to Comment 6: *As previously mentioned in the response to Comment 5 above, estimates of GHG emissions cannot be made without information or descriptions regarding a specific project or projects that could result in GHG emissions. Since this is a lease sale, any information or project descriptions upon which an estimate of GHG emissions could be based do not exist at this time. If and only at such time that specific projects are proposed on these lease parcels, estimates of potential GHG emissions can be evaluated in the project-specific NEPA analysis that would be required. This EA has generally addressed and acknowledged that emissions of GHG, including carbon dioxide, could occur as a result of the May 2015 oil and gas lease sale. However, in light of the uncertainties at the present stage, the leasing stage, which have been briefly described in the response to Comment 5 above, an attempt to be more specific and quantitatively identify potential GHG emissions, and specific impacts potentially attributable to any such emissions, would be purely speculative and of no value with respect to the informed decision making objectives of the National Environmental Policy Act (NEPA). Estimates of GHG emissions are not estimates of impacts rather they are reporting requirements per CEQ and EPA guidance.*

Comment 7 – WildEarth Guardians: “While BLM acknowledges some impacts of climate change, it fails to draw the necessary connection between this project and increased climate impacts and costs. BLM improperly declines to assess the impacts of climate change, promising to assess them at some unknown time in the future.”

BLM Response to Comment 7: *See the responses to Comments 5 and 6 above.*

Comment 8 – Wild Earth Guardians: The EA fails to take the “hard look” required by NEPA because it utilizes a “misleading economic analysis” that highlights the potential economic

benefits of the May 2015 oil and gas lease sale, while omitting a comparable discussion of the potential economic costs associated with the May 2015 oil and gas lease sale. Therefore, the EA must be modified to analyze the social cost of carbon.

BLM Response to Comment 8: *The EA has analyzed and discussed the reasonably foreseeable economic impacts for the May 2015 lease sale and this discussion included potential impacts that were both positive and negative in nature. As the commenter has stated, the EA has discussed the possibility that the local economy might be positively impacted by future oil and gas development operations within the project area for the May 2015 oil and gas lease sale. However, in contrast with the commenter's characterization of the EA as providing a "misleading economic analysis" that inappropriately highlights positive over negative economic impacts, the EA also includes a discussion of the potential negative socioeconomic impacts that could result from the May 2015 oil and gas lease sale. For example, in Chapter 4 (Environmental Impacts) of the EA, with regard to the potential for negative socioeconomic impacts to result from the May 2015 oil and gas lease sale the EA states "Negative socioeconomic impacts may also stem from oil and gas exploration and development activities... [A]dverse social and economic consequences for areas adjacent to rapid oil and gas development might include...higher costs of living and decreases in recreational tourism revenue." In addressing the potential direct, indirect and cumulative impacts, including the potential socioeconomic impacts, for the May 2015 oil and gas lease sale, the EA focused upon the reasonably foreseeable impacts most relevant to ensuring that the BLM's leasing decision would be well-informed of the potential impacts to the human environment and, this focus, along with the tools and information available for analysis, guided the level of detail and the use of qualitative versus quantitative analysis that the EA utilized in addressing potential impacts from the May 2015 lease sale. The EA disclosed the reasonably foreseeable impacts, but it did not attempt to quantify impacts, such as the potential social impacts from GHG emissions that might be associated with the May 2015 oil and gas lease sale, where, because of the information or tools available, the results would be highly speculative and add little or no value to ensuring a well-informed May 2015 oil and gas lease sale decision.*

Comment 9 – WildEarth Guardians: "BLM must conduct a thorough analysis of hydraulic fracturing to comply with its NEPA responsibilities. The reference to this practice does not fulfill the agency's duties to take a hard look at the impacts of its action."

BLM Response to Comment 9: *The Environmental Assessment only analyzes the leasing of parcels. However, the potential for water quality and water quantity impacts from one well per parcel were considered during preparation of the EA as documented in Appendix C. It was determined those impacts under these alternatives did not have the potential to rise to the level of significance. Future oil and gas activities and impacts to water quantity and quality will be revisited at a later time upon receipt of a site specific APD.*

Comment 10 – WildEarth Guardians: "The BLM must identify which parcels are in non-attainment or maintenance areas for National Ambient Air Quality Standards and then demonstrate conformity with the applicable State implementation plans."

BLM Response to Comment 10: *None of the parcels are in nonattainment areas.*

Comment 11 – State of Utah: Sale ID numbers [...] UT-0515-7934-012, UT-0515-7935-013 [and] UT-0515-7941-019 [...] contain crucial winter habitat for mule deer. Disturbance in these parcels should be avoided to the extent possible from December 1 through April 15.”

BLM Response to Comment 11: *CCFO has attached appropriate lease stipulations regarding spatial and temporal buffers for crucial winter habitat for mule deer to parcels UT-0515-7934-012, UT-0515-7935-013 and UT-0515-7941-019. Further detailed analysis will occur at APD stage, if the parcel is leased.*

Comment 12 – State of Utah: “Sale ID number [UT-0515-7942-020] lie[s] within 0.25 miles of, or contains several known ferruginous hawk nests. [...] Raptor protection guidelines published by the U.S. Fish and Wildlife Service (USFWS) should be followed.”

BLM Response to Comment 12: *CCFO has attached appropriate lease stipulations regarding spatial and temporal buffers for raptors to parcel UT-0515-7942-020. Further detailed analysis will occur at APD stage, if the parcel is leased.*

Comment 13 – State of Utah: “Sale ID numbers UT-0515-7934-012, UT-0515-7935-013 [...], UT-7941-019, UT—0515—7942—020 [...] occur partially or wholly within the Bald Hills Sage Grouse Management Area (SGMA) and contain “opportunity” habitat and “other” habitat. Please evaluate leasing within this SGMA according to the *Conservation Plan for Greater Sage-grouse in Utah* [...].”

BLM Response to Comment 13: *While the BLM Utah has not adopted the State of Utah’s Conservation Plan for Greater Sage-grouse in Utah (2013), it has evaluated the potential impacts to greater sage-grouse that could result from the May 2015 oil and gas lease sale, as previously discussed in the responses to Comments 2 through 4 above. Based upon a review of the lands nominated for the May 2015 oil and gas lease sale, BLM has deferred all of the nominated lands that were determined to encompass habitat for greater sage-grouse from the May 2015 lease sale (See Appendix D of the EA). Thus, the lands that remain in the parcels that are proposed for lease at the May 2015 lease sale (See Appendices A and B of the EA) have been determined to not possess habitat for greater sage-grouse.*

Notwithstanding BLM’s determinations regarding greater sage-grouse habitat for the May 2015 oil and gas lease sale, it should also be noted that according to the State of Utah’s Conservation Plan for Greater Sage-grouse in Utah, “opportunity areas” are defined as “those portions of a SGMA that currently do not contribute to the life-cycle of sage-grouse” where factors such as wildfire or the proliferation of invasive plant species have rendered the land “less useful or useless as habitat” but these areas “may be transformed in to either habitat or non-habitat based upon natural events or management choices.” Conservation Plan for Greater Sage-grouse in Utah at pp. 8-9. In other words, “opportunity areas” are areas that presently contain neither greater sage-grouse nor valuable habitat for greater sage-grouse that may, based upon some unspecified future event, be transformed in to habitat, or continue as non-habitat, for greater sage-grouse.

